

1388-10

X-Ray

TRADE MARK REG.

Reflectors

THE STANDARD FOR LIGHTING
SINCE 1897

GOLDEN

ARMORED



HANDBOOK

25

Curtis Lighting

CHICAGO

Engineers in the Principal Cities

NEW YORK

TORONTO

LONDON

PARIS

ANTWERP

PHILADELPHIA

GENERAL INDEX

(Numerical Index on Pages 89-90)

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Serial No. 770

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SHOW WINDOW LIGHTING—once an innovation, advanced as a new principle, diligently developed and now an accepted method in modern illumination, typical of the achievements of the aggressive group of talented personalities making up the pioneering organization known as

• Curtis Lighting •

CHICAGO

TORONTO

Engineers in the Principal Cities

LONDON

PARIS

NEW YORK

ANTWERP

X-Ray Reflectors

Standard for Lighting since 1897

- X-Ray Reflectors were the first reflectors for shop window lighting!
- The first installation of X-Ray show window "searchlights," as they were then called, was in a small Chicago haberdashery store known now in the larger cities as the Washington Shirt Company.
- The ability of these "show window searchlights" to penetrate the darkness was compared to the penetrating qualities of the X-Ray (Roentgen) tube used by the medical profession. It is because of this comparison that these reflectors were and have since been called by the trade name "X-Ray" Reflectors.
- Merchants and architects, as well as electrical contractors and wholesalers, will recall the popular old types of X-Ray Reflectors by the trade names "Scoop," "Visor," "Helmet," "Poke Bonnet." These were the pioneers which established X-Ray Reflectors as the "Standard for Show Window Lighting."
- Interior floodlighting was introduced with X-Ray Reflectors in the development of the No. 33 X-Ray Window Floodlight. The several sizes now available are striking examples of the accurate light-control of X-Ray Reflectors and offer many new opportunities to apply this equipment.
- High intensity industrial lighting, especially in high interiors, was made practical in the perfection of "Jumbo" and "Big Boy," Curtis Industrial Reflectors. Accessories and fittings developed for X-Ray Reflectors offer complete flexibility for unusual lighting, with features for practical and economical installation.
- CurtiStrip, the standard and practical wireway for commercial and industrial uses, saves time and money because of its many exclusive features and occupies a unique position in this field. It is wired on the bench, installed like a fixture and is perfectly aligned without effort. The applications are almost unlimited.
- LightStrip, the lighting channel recently perfected and the only one that can be made to any length from local stocks, is made with CurtiStrip—embodies all its features and those of a compact lighting channel in which lamps can be placed on any spacing according to the requirements of each job.
- X-Ray Reflectors,—designed for accurate light-control and maximum efficiency, are Golden Armored to insure satisfactory performance and long life.
- X-Ray Reflectors are produced by a trained and experienced organization with factories in the United States, Canada and Europe. They are used in all cities of the world and are available through the electrical trade everywhere!

— [X-Ray Reflectors and other products shown in this handbook are covered by U. S. and Foreign patents owned exclusively by Curtis Lighting, Inc.] —



X-Ray Reflectors

TRADE MARK REG.

Golden Armored



EXPERIENCE and research of more than a third of a century have brought marked improvement in X-Ray Reflectors. Today Curtis Lighting continues as in the past, to provide a product of unequalled performance and efficiency. The fundamental requirements of accurate light-control, efficiency and eye comfort embodied in the first X-Ray Reflectors (designed in 1897), are the basis of the current styles.

Made of Clear Tough Glass

Each X-Ray Reflector is hand-made, from a special grade of glass—not re-melted glass as is commonly used, but the highest clearest crystal quality, free from discoloration, "seeds" and "bubbles." It is of a "lively" diamond brightness, and a tough texture, so that it resists breakage to an unusual degree—yet it is thinner than the average reflector. These points are as important as the reflectors' scientific design, for they mean very low absorption and the reflection of the greatest amount of light.

Pure Silver Reflecting Surface

The reflecting element applied to the outer surface of this unusual glass is *pure silver*. The silver is completely protected by the glass on the inner side and by the Golden Armor on the outer side.

U. S. and Canadian **Golden Armor** Trade Mark Reg.

Golden Armor is a scientific process, developed and perfected in Curtis Research Laboratories, to keep the silver *bright* on X-Ray Reflectors—always good as new. It protects the reflector against tarnishing, cracking, checking, peeling, blistering or discoloring without any possibility of chemical reaction or amalgamation. It is more than a color or dress for the outer side of the reflector, for it insures continuous satisfactory service.

It is not a copper nor copper-like backing. There is nothing in Golden Armor to discolor or absorb the silver (see page 6). The loss of efficiency that results from other "coatings" cannot and does not occur in Golden Armored X-Ray Reflectors. They are insured of their sturdy endurance and lasting qualities at all times. The silver reflecting surface *stays bright*.

You always get all the light you pay for!

Golden Armor
U. S. and Canadian Trade Mark Reg.
A Symbol of the Service and Durability
of X-Ray Reflectors!

Insist on Genuine X-Ray Reflectors—Refuse Substitutes

The acknowledged success of X-Ray Reflectors has encouraged imitations of an inferior quality. Some of these closely mimic the real "X-Ray," but none bear the "X-Ray" trademark which will be found on every genuine X-Ray Reflector.

Appearance: The outer side of an X-Ray Reflector is a pleasing modern satin gold color, and a "texture" that gives it a distinctive appearance. The glass is "clear as crystal." Note that the silvering has a superior brightness.

Application: There is an X-Ray Reflector for every lighting need! Each has a wide range of uses—even beyond those shown in this Handbook. Curtis Designers and Engineers cooperate in planning efficient satisfactory illumination. For your convenience, Resident Engineers are located in the principal cities. They are all experienced lighting men, and have to their credit many outstanding successful lighting installations.

A comprehensive idea of the scope of Curtis Lighting may be had from "The Lighting Book" (more than 300 pages) that illustrates and gives data on the application of X-Ray Reflectors. You may refer to this book in your city library.

A compact bulletin available, on request, is known as "Planned Lighting." This gives additional engineering data, easy to use.

Installation: Each X-Ray Reflector is built to last for years under all normal service conditions. A substantial ruggedness is inherent in its qualities, and when installed with the simple and inexpensive fittings designed and listed for the various purposes, insures a sturdy, safe equipment of precise light-control.

Each type of X-Ray Reflector is designed with expert scientific accuracy. The remarkable result for which they are famous is secured only by using the proper lamp and holder indicated for each reflector. We do not recommend the so-called "adjustable" holders which allow the lamp to be placed "out of focus" originally, or to come "out of adjustment" in service.

Guarantee: As always in the past, X-Ray Reflectors continue to be guaranteed to give perfect service and complete satisfaction regardless of the date of purchase. Since 1897, when the first X-Ray Reflector was made, there has been no change in this policy.

Beware of Exaggerated Claims in Violation of Code of Fair Practice: The claims made for reflectors of inferior quality are often exaggerated and misleading. Distorted and confusing statements as well as out-of-scale distribution curves may be used to support their arguments. A careful comparison of products is often necessary to detect these unfair practices. Usually appearance alone will disclose the superiority of the genuine X-Ray Reflector, when placed side by side.

Don't Be Misled with "Trick" Accessories: Business districts are sometimes flooded with "fake" accessories, sold by "trick" methods and exaggerated claims. Most of these merely distort the work of a good lighting unit. Satisfy yourself by thoroughly investigating all such accessories before using them. Remember that no lighting equipment can deliver more light than the lamp itself produces (see page 7).

Use Your Own Lamps When Testing: Unscrupulous strangers sometimes offer lighting units equipped with under-voltage lamps, or lamps with counterfeit labels. Untrue claims in violation of the Code of Unfair Business Practice may be made that a considerable saving in electricity is possible with such equipment. Under-voltage lamps do burn very brightly, but only last a short time. Therefore insist that any demonstrations of lighting results must be made with lamps supplied by you or your local Power Company. They are sincerely interested in delivering to you the most light for every Kilowatt Hour of energy you purchase. Call them in to check up on any elaborate claims before you buy.

Purchase Only From Reliable Supplier: Leading electrical houses in every community supply X-Ray Reflectors and invariably include them in their recommendations wherever efficiency, precise light-control, and permanence of these qualities are required. You need go no further than your local source of electrical supplies to learn the facts about X-Ray Reflectors and the organization back of them.



Insist on genuine "X-Ray Reflectors!" The original X-Ray Reflector can be easily identified by the distinctive texture of the glass, the characteristic Golden Armor on the outside and the "X-Ray" label. Look for it!

Refuse to accept substitutes for the genuine "X-Ray." In the final analysis exaggerated claims of the imitator mean nothing, and their main hope for a sale depends entirely on the inexperience or carelessness of the buyer.

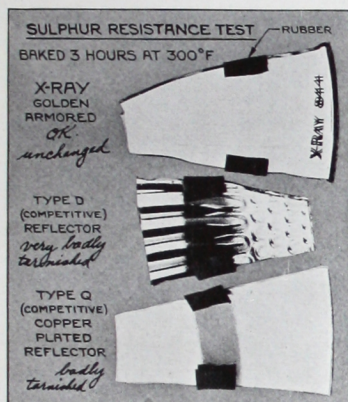
X-Ray Superiority Readily Confirmed by Test

METHODS used in making ordinary mirrors which are not subjected to the heat of high powered lamps, will not do for the manufacture of a satisfactory reflector! . . . The life and performance of every reflector depends on the *quality* built into it!

Reflectors of similar size and shape, but of different makes, might appear equally good. . . . Initial light-control and efficiency can be measured, but to know the durability of each *quickly*, they must be tested!

Two accelerated tests which are comparable to many years of service, should be conducted for a quick indication of durability: (1) Reflectors must withstand high temperatures; (2) the silver must not tarnish from sulphur or other fumes that are present in the air.

Cut or break each reflector into several pieces and put a piece from each reflector to exactly the same test. Compare tested pieces with each other and with untested pieces from their original reflector.



Sulphur Resistance Test: Sulphur causes silver to tarnish. Sulphur fumes are present in the air wherever coal is burned, also where rubber, leather, or certain food stuffs and materials are made or displayed. Tie wide rubber bands or pieces of tire inner tube (these contain considerable sulphur) on the back of a piece of X-Ray or any other reflector. Bake in oven for several hours at 300° to 350° F. Photographs of such a test at left show that X-Ray Reflectors resist sulphur fumes. Golden Armor is equally resistant to other fumes!

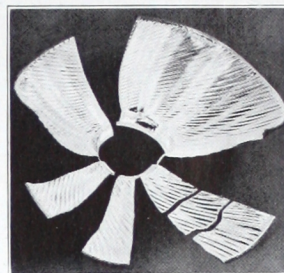
Heat Test: Bake pieces from different reflectors at high temperatures. (A short test of one hour at 600° F. or 5 hours at 500° F. will show results that are comparable to 250 hours at 450° F.). Compare tested pieces with each other and with untested pieces. While the nature of the break-down varies according to the method of manufacture, this fact is certain: A reflector that will NOT withstand a high temperature test will NOT retain its initial efficiency very long in service!

The microscopic photographs at the left show the result of heat tests on three different reflectors. The naked eye may not readily see all this "breakdown," but a microscope will readily show such "breakdown."

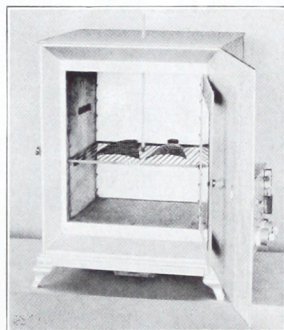
Certain reflectors will develop a pink or lavender discoloration in service, or under test. This type of failure is characteristic only of copper-plated reflectors (all types), and is due to the absorption of silver by the copper plating. This merging, inherent in the nature of silver and copper, takes place very much faster under the heat of the lamp than at room temperature. The gradual absorption of the silver by the copper, changes the reflecting surface from clear white-silver to silver contaminated with red copper.

Obviously such changes reduce the light output and efficiency of the entire reflector, even though it may still *seem* to be rather bright. . . . When the *color* of the silver changes, the *color* of the reflected light is also changed. Some light is absorbed by the discolored surface, or it may be reflected (or diffused) in an entirely different direction than that originally intended. Such light, even though wasted, costs *real* money!

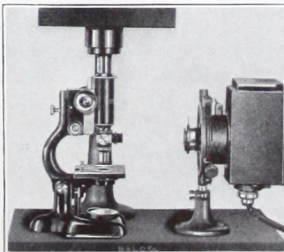
X-Ray Reflectors are Not copper plated! They are *Golden Armored*!! There is nothing in the Golden Armor process to absorb the silver or to be absorbed by it. Therefore, there is No reaction, absorption or discoloration. X-Ray Reflectors Do NOT mottle, stain, discolor, blister, peel or check! You always get all the light you pay for when you use X-Ray Reflectors!



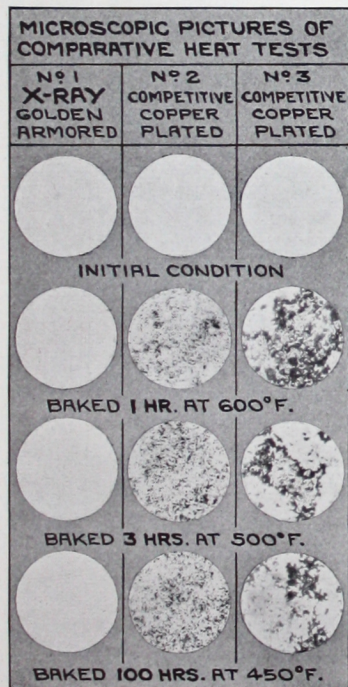
Reflectors are cut up or broken into pieces for various tests. Always keep one piece to compare with tested pieces.



Pieces from each reflector are placed in the center of the oven, and baked at high temperature.



Tested pieces are carefully inspected under a strong light. A microscope affords opportunity for close study and photographing.



Engineering Data Easily Understood

A Practical Explanation of the Reflection of Light . . . Lighting Terms . . . The Economy of Adequate Wiring to Avoid Lighting Losses

REFLECTORS are rated by their reflecting efficiency (their ability to accurately control the light from the lamp). Silver mirrored glass has the highest reflection efficiency as will be readily understood from the results of tests given in this table:

Reflection Factors

The original quantity of light produced by any lamp and delivered to the reflector is considered as 100%. The factors in the table below show the percentage of this light reflected for use, and indicate the reflecting efficiency of various materials.

MATERIAL	INITIAL REFLECTION FACTOR
Silvered Glass	85-93%*
Aluminum, polished	55-87%
Aluminum, oxidized	75-85%
Chromium	63-65%
Porcelain enameled metal	65-75%
The above from tests made by General Electric Company, Nela Park Engineering Dept., Cleveland, Ohio.	
Rhodium	65-72%
The above from tests made by U. S. Bureau of Standards.	

*X-Ray Reflectors are made of the highest, clearest quality crystal glass (see pages 4, 5), mirrored with pure silver, and have the highest rated efficiency of any silvered glass reflector.

Silver mirrored glass produces what is termed "regular (specular) reflection"—each ray of light received from the lamp being reflected as a complete beam. The light is not broken up or diffused as with a mat or porcelain enamel surface. X-Ray Reflectors are made of glass which can be blown to any shape and corrugated to produce the exact distribution of light needed. Their accurate light-control and higher efficiency will be confirmed under test by using the "Sight-Meter" described on page 8.

The exclusive Golden Armor process maintains X-Ray Reflectors at their original brilliancy (see page 6). The silver is protected on the outside by the Golden Armor and on the inside by the glass. When you clean an X-Ray Reflector you are cleaning the glass—not the reflecting surface, as is the case with metal reflectors.

Measuring Light

Light is measured by an instrument known as a Sight Meter, Foot-Candle Meter or Illuminometer.

The control of light by any lighting unit is shown in graphic form by a "light-distribution curve," which indicates the intensity in candle power at any angle. With symmetrical reflectors the distribution in all directions is the same. With non-symmetrical reflectors (such as window reflectors), distribution is

not the same in all planes. . . . Curves for window reflectors are made in the plane perpendicular to the window glass, (thru a section of the window).

Distribution-curves are not always correctly interpreted or clearly understood. Many have assumed that curves show a "comparison in light output," whereas they only show the "distribution of light"—hence the term "distribution-curves."

Obviously no reflector can reflect more light than is produced by the lamp. Example: A 100-watt lamp has a total light output of 1490 lumens. No reflector can increase this.

One reflector will direct the light over a large area while another confines the same total amount of light to a smaller area—naturally to a higher intensity—because the light is not "spread out as thin"! The distribution-curves from two X-Ray Reflectors shown above, illustrate "light-control." For purpose of comparison curves should always be drawn to the same scale (as these are).

The distribution curves shown in this Handbook give a practical idea of the light-control of each X-Ray Reflector and include a correct reproduction of its technical photometric curve.

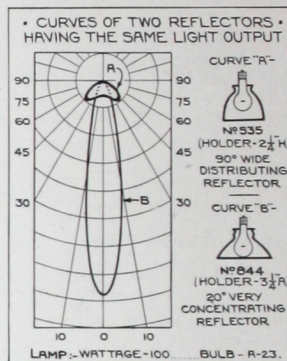
Other Lighting Terms

CANDLE POWER—is the standard unit for measuring the brightness of light in any given direction—not used for measuring total light output, nor for rating lamps.

FOOT CANDLE—is the standard unit for measuring the intensity of light on a surface. One foot candle is the intensity produced on a surface one foot square and one foot distant from a light source of one candle power.

LUMEN—is the standard unit for measuring the quantity of light. . . . The total light output of lamps is expressed in lumens, and their efficiency in the number of lumens produced per watt of current consumed in each hour's burning.

WATTS—Lamps are rated in watts to indicate the power they consume. The basis of determining the cost of operation is figured in Kilowatt Hours, one kilowatt hour being equal to the burning of one watt for 1000 hours or 100 watts for 10 hours.



"A" shows wide distribution over large area with No. 535 (page 63). "B" shows intense concentration confined to very small area with No. 844 (pages 26, 65). Both reflectors used the same 100 watt lamp and each delivers the same amount of light.

Avoid Lighting Losses by Providing Adequate Wiring

LAMPS produce light most economically when operated at their rated voltage. Their operating efficiency is 100% only if and when the voltage at the lamp socket corresponds to the rated voltage of the lamp. For every 1% decrease in voltage at the socket there is a decrease in light output of 3.5% with a slight increase in the cost of producing each unit of light. Ordinarily this is not clearly understood, and in fact receives very little consideration except when expense items such as wiring or lamp renewal costs are carefully studied.

The average person assumes when a lamp gives light it is operating satisfactorily. When planning a new installation they may assume if their wiring complies with the requirements of the National or local Electrical Code that it meets *all* requirements. The purpose of the National and Local Electrical Codes is to provide only a standard for safety, not for the efficient operation of electric lighting systems.

As an example, No. 14 wire will carry 15 amperes (approximately 1500 watts) safely and satisfy the "Code" requirements regardless of the length of the "run," but it cannot carry this load more than 25 feet without a drop of two volts or more. This same load would produce a four volt drop at 50 feet and an eight volt drop at 100 feet. Adequate wiring should conform to the following specifications:

1. Fulfill the requirements of the Electrical Code.

2. Arrange initial capacity of branch circuits so that each socket can be fitted with a lamp of higher wattage without overloading the circuit.
3. Wire in branch circuits should not be smaller than No. 12. For runs of more than 50 feet from the panel board to the first outlet, No. 10 wire should be used for that portion of the circuit and No. 12 between outlets. Panel boards should be re-located or additional ones added if the run exceeds 100 feet from the panel board to first outlet. Where such runs cannot be avoided, No. 8 wire should be used. Long runs are not practical. Use more panels and limit circuits to 1000 watts.

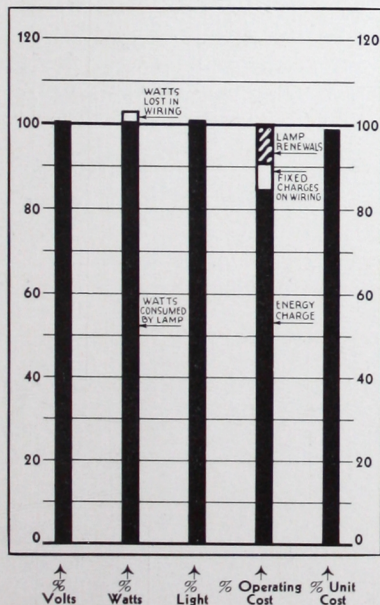
Sight Meter

This compact little instrument measures light (no batteries or wires are needed). Just place it where the intensity of light is to be measured, with the disc uniformly lighted. The Sight Meter then instantly indicates amount of light (in units of foot candles).

By means of this simple inexpensive device it is readily possible to be assured of adequate illumination at all times.



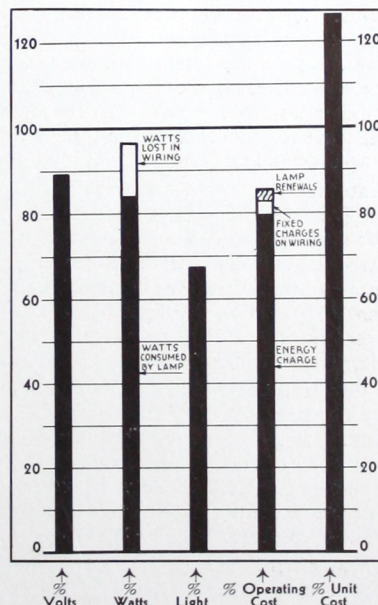
Illustration is one-half actual size.
Length $4\frac{3}{8}$ ", Width $2\frac{3}{8}$ ", Height $1\frac{1}{8}$ ",
net weight $8\frac{1}{2}$ ounces.

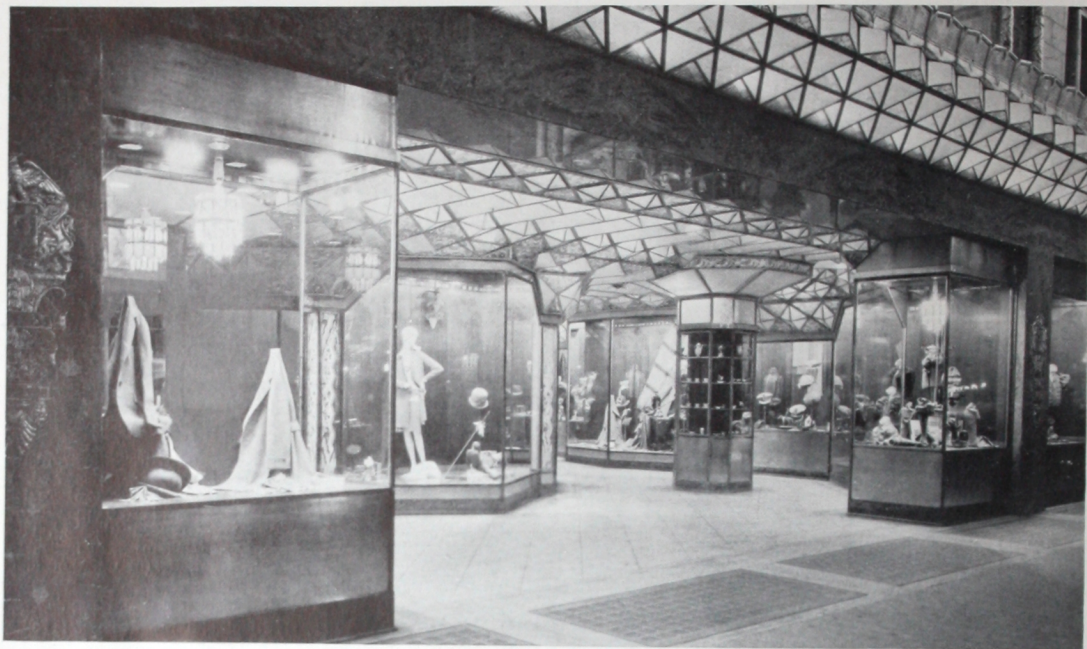


Cost of Inadequate Wiring

The chart at the left shows how lamps operated at their rated voltage produce the normal amount of light for the least cost. Compare the columns "Per Cent Light" and "Per Cent Unit Cost" with those in the chart at the right. The reason unit cost of light is greatly increased is due to the fact that in lamps burning under voltage the light output decreases more rapidly than the watts consumed. Each 1% drop in voltage brings about a 3.5% decrease in light output, with a resultant rise in the unit cost of light.

In addition to providing wire of sufficient size for proper voltage at the lamp socket, it is always well to plan for future flexibility. The cost of installing "over-size" wires that will carry more than the initial requirements, is very small, and often saves considerable trouble and expense for making alterations or increasing intensities later on.





Show Window Lighting

SHOW windows are often termed the "eyes to the store," meaning that it is through the show windows that the passer-by receives his impression of the values, style and quality. That is why progressive merchants vie with one another to have attractive window displays. Very often efforts are directed to make the entire front of the building distinctive.

Every merchant, whether he can afford the elaborate front or just the plain type of window, believes in lighting his display so that it will *sell*. Keen competition makes it necessary to have the most permanently efficient reflector equipment, with flexibility in the wiring for increasing intensities. This is important in planning the lighting because it saves the expense of rewiring when neighboring merchants alter their fronts or improve their lighting.

The standard method of lighting show windows is by the use of X-Ray Reflectors mounted near the front glass. It is advisable to use or provide for one or more interior spot or floodlights in each window. These can be used with the regular window lighting or independently, according to the requirements of various displays.

Color lighting adds interest to window displays. The ease with which color lighting is accomplished

with standard X-Ray color equipment makes it practical for large or small stores.

Windows in or near prominent business sections should be lighted to a high intensity for two reasons,—first, to increase the pulling power of the display and also to the stores in this brightly lighted section; second, to reduce any annoying reflections in the plate glass (see page 16). This is only successfully accomplished by increasing the intensity of light in the show window to approximate the intensity on the outside. The use of lighter color matte backgrounds instead of dark backgrounds assists materially.

The possibilities for planning unusual store fronts are almost without limit. The large or small store can have unusual moderne design, lighted glass panels, cornices, etc. In each it is possible to depart from the standard methods of mounting or installing window reflectors by either recessing equipment above the ceiling, providing louvers, glass panels, or ceiling pattern arrangements, as briefly described on pages 14 and 15.

Representatives of Curtis Lighting are located in the world's principal cities to assist in planning effective show window lighting for the large or small store. Consult them!

**BEFORE**

Windows That SELL are Well Lighted!

Bad!!**Good**

These *real* pictures show the tremendous difference between *poor* lighting (*left*) and *good* lighting (*right*) in the same windows. All attention should be on the merchandise (*right*) not on the dazzling bare lamps or glaring glass globes (*left*)! X-Ray Reflectors will make the same wonderful change in other windows that they have for these three stores!

**AFTER****OLD****NEW****BEFORE**

Compare the Results!

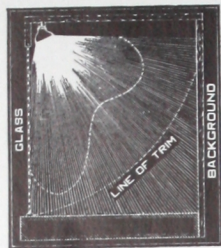
Poor lighting is an extravagant waste (*left*)! It costs *real* money for current and yet actually *loses* sales!! The wonderful improvement in the lighting from X-Ray Reflectors (*right*) is explained by a simple chart and table on page 12.

It's all in the

**X-Ray
Reflectors**

"Standard for
Show Window
Lighting!"

**AFTER**



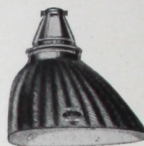
Deep windows



PLANNING SHOW WINDOW LIGHTING

Complete information with engineering data so simplified that it can be easily understood.

**X-Ray
Reflectors**



Shallow windows

SHOW WINDOWS are divided into two general groups according to size—deep or shallow.

DEEP WINDOWS with a high background or trim (depth and height approximately equal) are lighted by *distributing* X-Ray Reflectors. The general distribution of light from this type is shown by the diagram above (left). Notice by the curve (dotted lines) how the lighting changes gradually from top to bottom with greater concentration in the lower portion of the window. (Complete details on distributing window reflectors on pages 19, 21, 23.)

SHALLOW WINDOWS with low trim or low background (depth approximately one-half the height) are lighted by *semi-concentrating* reflectors. The general distribution from this type is shown by the upper right diagram. Most of the light is concentrated in the lower portions of the window. (Complete details on semi-concentrating X-Ray window reflectors on pages 18, 20, 22, 24, 25, 28.)

VERY SHALLOW WINDOWS need *very concentrating* X-Ray Reflectors such as the 150-100 watt No. 844 (page 26) or the larger sizes Nos. 804, 842 (pages 48, 49). These windows are difficult to light because they are so very shallow. It is most important that the lower portion should be lighted as brightly as the upper. These very concentrating X-Ray

Reflectors do a splendid job. They provide an intense concentration of light in the lower part of the window and uniformly illuminate the upper part of displays to about the same intensity.

ISLAND WINDOWS: Windows having glass on at least the two long sides are generally treated as "double shallow show windows" (with back to back, yet without a background dividing them). As a rule they are lighted best with semi-concentrating X-Ray Reflectors placed along the length of each glass. If such windows are very narrow or trim very low, they may be treated as "double very shallow windows," using very concentrating X-Ray Reflectors Nos. 844, 804, 842 (pages 26, 48, 49).

Ample capacity should be provided in the wiring for future as well as present lighting requirements. It costs very little more to do this and it often saves trouble and expense when neighboring merchants improve their lighting. This does not mean that a merchant should purchase a larger size reflector than he needs, but that his windows should be wired in "over-size" wire that will safely carry more current than his present requirements. Additional equipment such as interior floodlights can then be added to help build up the intensity to command the same attention as the neighboring store.



Easy to Select the Correct X-Ray Reflector

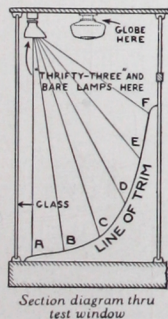
THINK of the window that you are going to light as though you were looking through the "end" of it. This will help to determine the three dimensions needed to select the proper reflector: (1) The height above the floor at which the wiring for the reflectors will be mounted; (2) Depth of window from front to back; (3) Height of background or display.

Determine what reflector to use from the table at the right. First locate your mounting height in the left column "Height." In the next column find the depth of your window. Move along this line to the column under "height of background or display." That gives the height corresponding to that in your show window. The reflector designated in this space is the one to use. Example: For show window 9 feet high, 5 feet deep, with background 5 feet high, No. 510 Reflector should be used.

Spacing of Reflectors

The number of reflectors to use is influenced by the brightness of neighboring windows, the intensity of the street illumination, goods displayed, and color of the background, as well as the merchant's realization of the advertising and selling value of bright, well lighted windows. The closer reflectors are spaced, the brighter becomes the light in the window and vice-versa. In average installations spacing from center to center of reflectors is from 12 to 24 inches. In general, the following spacing is suggested:

Large cities, business district. 12"
Large cities, suburban district. 12" to 18"
Small cities. 12" to 18"
Towns. 15" to 24"



Test Shows Comparison of Actual Light on Display

Same Window, Same Goods, Same Current—300 Watts
(Measured through middle of window)

Points on Display	2—150 or 3—100 watt Bare Lamps	1—300 watt in Enclosing Globe	X-Ray Reflectors 3—No. 310 with 3—100 watt Lamps
A	10	8	45
B	9	10	60
C	10	12	65
D	12	16	64
E	17	28	63
F	21	65	40
Total	79	139	337
Average of 6 points	13	23	56

Intensities in Foot Candles, the standard measurement for light.

Diagram illustrating the selection of reflectors based on window dimensions and mounting height.

Labels:

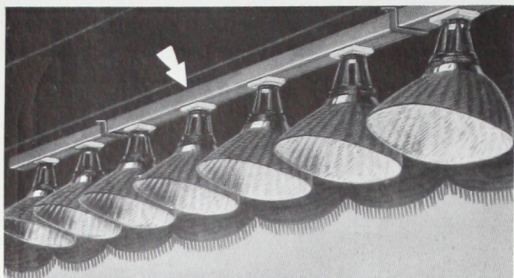
- Front of Window
- Back of Window
- Distance from Front to Back of Window
- Height of Background or Display
- Mounting Height of Reflectors, or Height from Floor to Ceiling
- Plate Glass
- Measure from Floor to Top of Background or Display

Table:

Height Feet	Depth in Feet	Height of Background or Display															
		1 to 2 Feet	2 to 4 Feet	4 to 6 Feet	6 to 8 Feet	8 to 10 Feet	10 to 12 Feet	12 to 14 Feet	14 to 16 Feet								
4	1 to 3	844	310	400													
	3	310	310	400													
6	4	310	400	400													
	5	310	400	400													
6	2	844	410	410	400												
	3 to 5	410	410	400	400												
8	5 to 7	410	410	400	400												
	7 to 9	410	400	400	400												
8	2 to 4	804	510	510	510	500											
	4 to 6	510	510	510	500	500											
10	6 to 8	510	510	500	500	500											
	8 to 10	510	500	500	500	500											
10	10 to 12	510	500	500	500	500											
	3 to 5	804	510	510	510	500	500										
12	5 to 6	510	510	510	500	500	500										
	6 to 8	510	510	510	500	500	500										
12	8 to 10	510	510	500	500	500	500										
	10 to 12	510	500	500	500	500	500										
12	4 to 6	804	510	510	510	510	510	500									
	6 to 8	510	510	510	510	500	500	500									
14	8 to 10	510	510	510	510	500	500	500									
	10 to 12	510	510	510	500	500	500	500									
14	12 to 14	510	510	500	500	500	500	500									
	14 to 16	510	500	500	500	500	500	500									
14	4 to 6	842	842	1010	1010	1010	1010	900									
	6 to 8	1010	1010	1010	1010	1010	900	900	900								
16	8 to 10	1010	1010	1010	1010	900	900	900	900								
	10 to 12	1010	1010	1010	1010	900	900	900	900								
16	12 to 14	1010	1010	1010	900	900	900	900	900								
	14 to 16	1010	1010	900	900	900	900	900	900								

Index to lamp size and page number for reflectors listed in table above:

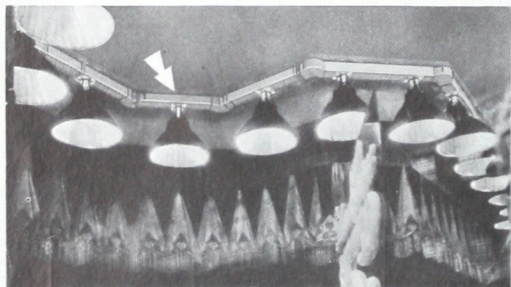
Reflector	Size Lamp	Page	Reflector	Size Lamp	Page
310	100 watts	18	804	200 watts	48
400	150 watts	19	842	500-300 watts	49
410	150 watts	20	844	150-100-75 watts	26
500	200 watts	21	900	500-300 watts	23
510	200 watts	22	1010	500-300 watts	24



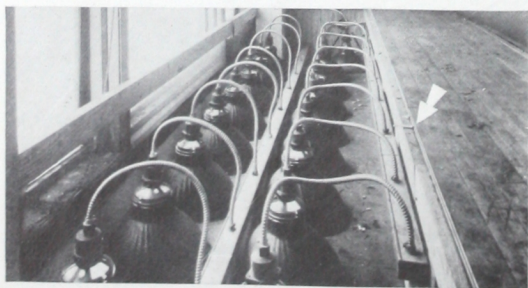
STRAIGHT WINDOWS: CurtiStrip is wired on the bench and installed complete or in sections like a fixture. Lines up straight without effort. All this saves time!



ANGLE OR OFFSET JOB: CurtiStrip makes a complicated wiring job easy to do. It is neat, practical and has many time-saving features that reduce cost of installation.



COMPLICATED ANGLE WINDOW: As easily done as a straight run. This type of window is not difficult to wire or light when CurtiStrip and X-Ray Reflectors are used.



RECESSING WINDOW REFLECTORS: Recessing reflectors is done in less time when CurtiStrip is used. Large wireway, standardized fittings, snap-in cover save time.

Suggestions for Wiring Show Windows

THE photographs reproduced at the left show several X-Ray window reflector installations, each differing slightly from the others. The simple installation (*top*) requires just a straight section of wireway. The installations on transom bar or ceiling in windows having many sides, meeting at various angles, sometimes seem to present quite a problem, but they really are not difficult.

There are several ways in which the reflector equipment can be mounted and installed, depending entirely on the construction of the window. CurtiStrip (pages 36-40) is recommended as the wireway to use because of its many features that save time and money. It is of sturdy construction, has an extra large space to accommodate many circuits, is wired right on the bench and installed as a complete unit like a fixture. Outlets can be added or respaced easily without "tearing up," or it can be taken down and adapted to new locations.

Provide Ample Capacity

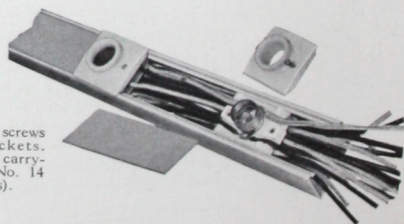
The wires that carry electrical energy to the lamps should be larger than are required to maintain the proper voltage at the lamp sockets when installation is made. The cost of installing "over-size" wires that will carry more than the initial requirements is very small. The cost to *change* or *add* to the lighting equipment is practically nil if the original wiring provides flexibility for the future. This does not mean that the windows need be provided with more reflectors or larger reflectors than are actually needed at the time the installation is completed. It means that the capacity of the wiring should be sufficient, and the wireway used should have flexibility, so that additional outlets can be added or larger reflectors substituted quickly, without the necessity of entirely rewiring.

It is always advisable to wire the regular window reflectors on two circuits. Provide one or two plug-in outlets, each on separate circuits for one or more interior floodlights (pages 45-52.)

Convenience Outlets

Provide convenience outlets in the background or floor of the show window according to the requirements of each window. This will provide current for interior floodlights, portable lamps, or for power.

One spacer and socket cover removed from this section of CurtiStrip give a clear idea how wires are laid under terminal screws of CurtiStrip Sockets. Notice the large wire-carrying capacity (30 No. 14 Rubber-covered wires).



Methods of Installing Show Window Reflectors

THE construction of each show window determines the method of mounting reflector equipment. The majority of show windows have reflectors mounted either at the ceiling or from the transom bar. Diagrams giving details on these methods of installing with CurtiStrip are included on the various pages covering show window reflectors.

Recessing Reflector Equipment Using Inexpensive Finishing Flanges

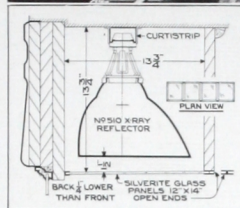
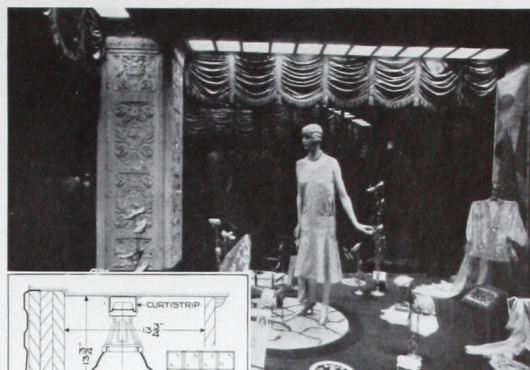
The most finished and neatest appearing show windows as planned by the store architect of today, have all of the wiring and reflector equipment recessed above the ceiling. This method may be used wherever there is sufficient height for the reflector equipment (page 30). It is especially recommended where show windows are enclosed. A finishing flange is used as the standard method of supporting the reflectors flush with the bottom of the ceiling. (For complete details and list of flanges for various reflectors see page 30.) These can be mounted in either ply-wood or plastered ceilings. The regular accessories available for each of the show window reflectors, Louvers and Color-Ray, can be used the same as when equipment is supported from the transom bar or the ceiling.

Reflectors Mounted Above Glass Panels

In some windows reflectors are concealed above glass panels. This construction may be similar to a box or a beam so that the glass panels will slide out through a slotted end. If the glass panel is mounted flush with the ceiling it is hinged, giving access to the reflector and lamp for maintenance. The glass used for the panels should be of a character that conceals the lamp and reflector from view but does not materially change the light control required for that particular window. Prism glass is not generally used as it changes the light control provided by the reflectors.

Interior Floodlights

Interior Floodlights offer a very interesting and unusually effective method of lighting the larger high window. As a general rule, the concentrating type will be used. Each provides the white or color high-light effect that commands attention. They may be recessed above glass panels, finishing flanges or hung on CurtiStrip. X-Ray Interior Floodlights (pages 45-52) have a base with universal swivel adjustment that makes it possible to change the direction at which light is concentrated.



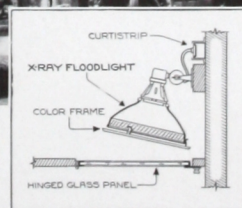
Reflectors concealed above glass panels in "box." Recessed glass panels may be installed flush with ceiling. Regular X-Ray Reflector light-control.

Color Lighting

Color lighting is easily provided with X-Ray show window reflectors by using a simple accessory known as "Color-Ray" that snaps into "dimples" in the reflector (see page 31 and 32). "Dimples" are an exclusive feature in X-Ray Reflectors that make it possible to add accessories at any time—they need not be purchased with the original installation. "Color-Ray" for interior floodlights is shown on pages 48-50 and 53.

Louvers

On the succeeding pages are included suggestions for recessing reflectors with individual or continuous Louvers, along with a very practical, unusual and effective method of lighting that has many features for large, deep show windows.



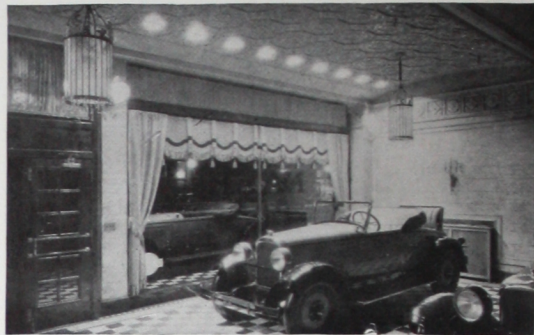
Interior floodlights placed above glass panels provide general lighting with highlight effects on "many unit" types of display.



Individual Louver



Continuous Louver



X-Ray Reflectors Recessed Above Ornamental Ceiling

Louvers

LOUVERS concealing the light source are particularly helpful in corner, island or long arcade windows. Individual X-Ray "Louvers" (page 32), are readily placed and securely held in the "dimples" incorporated in all X-Ray window reflectors of 150 to 500 watts capacity. The upper left photograph shows recessed reflectors with individual "Louvers," also No. 33-A interior floodlight with "Control-Ring" (pages 48, 53).

Long arcade windows (*center*), are often provided with a continuous hinged louver built according to the requirements of each show window. Curtis engineers will gladly offer suggestions on these applications.

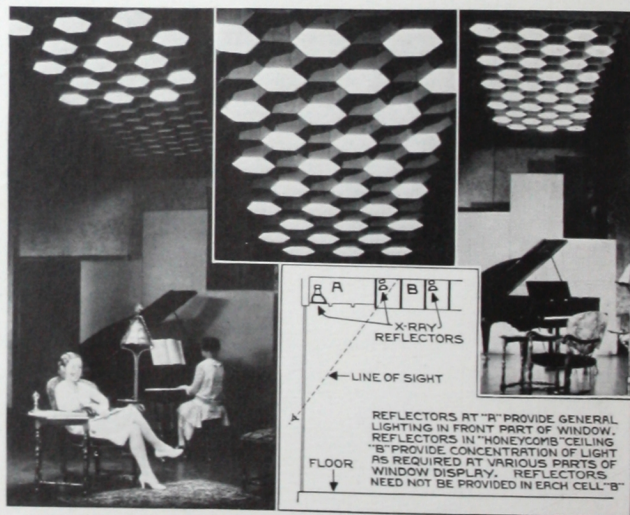
Recessing Above Plaster Ceiling

WHERE semi-concentrating reflectors are recessed in the center of ornamental plaster rosettes as shown above, and space above the ceiling does not permit wiring after lathing and plastering is done, conduit or CurtiStrip should be installed while roughing in the wiring. It is then very easy to connect wires to the socket for each reflector (page 30). After sockets are wired and fitted with holder and receptacle, they are put up through the opening in the ceiling. Reflectors are supported in position on the finishing flange. "Louvers" and "Color-Ray" (page 32) can be used singly or together with recessed reflectors.

Lighting with Ceiling Pattern

LIGHTING with ceiling pattern is especially effective for large, deep windows. The photographs and diagram at right are an example of Curtis engineering and artistry. The window ceiling is made up of units or cells in which very concentrating X-Ray Reflectors are installed. These supplement the lighting from regular X-Ray Window Reflectors mounted near the plate glass and provide the complete adequate lighting that is otherwise so difficult to effectively place in deep windows.

By an arrangement of switches, various portions of the display may be highlighted in much the same way as the leading rôle is spotlighted on the stage. Concealed interior floodlights with color equipment focused on the ceiling produce interesting color-shadow effects. The combination of highlighting the principal parts of the display with attractive ceiling pattern "stops the shopper," and SELLS!!



(Left) Concentrated lighting with part of equipment. (Center above) Reflectors lighted in alternate cells produce ceiling pattern. Notice shadow effects from portable floodlights. (Right) Uniform lighting with ceiling pattern. Curtis engineers will gladly assist in planning standard or unusual window display lighting.

Plate Glass Reflections During Daytime Reduced by High Intensity Lighting

These are real pictures taken during daylight to show how High Intensity Lighting overcomes plate glass reflections and makes it easy to see the display.

MANY windows lose their effectiveness during the daytime because reflections on the plate glass make it impossible to see the merchandise displayed. In some stores, especially where the backgrounds are dark, these reflections are so bad that the windows look like a mirror. They reflect everything across the street, but show almost nothing of the merchant's own display. Consequently people look at themselves instead of being attracted to the display.

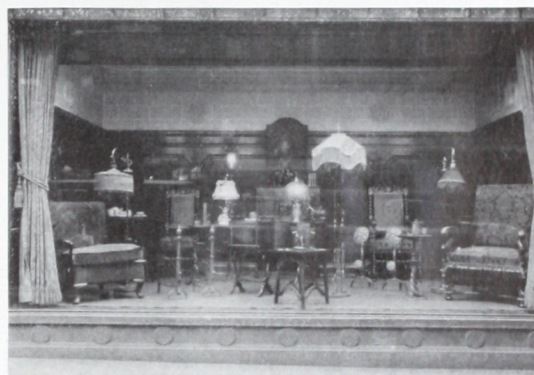
The practical method of overcoming these reflections is to increase the lighting in the show window to a *high intensity*—to *super-light* them! This calls for the use of larger reflectors and lamps than would ordinarily be employed. Large show windows will often require two rows of reflectors wired on two circuits. All lights can then be on during the daytime, only half are generally required at night.

Where reflections are quite general, use one or two rows (if necessary) of "Giant," "Leviathan" or "Blimp" (pages 23-24-25). If reflections are confined to only a portion of the display use "Hippo" No. 88 (page 49) to concentrate a higher intensity on these points. Where reflections on portions of the display are difficult to overcome *even with super-lighting* build up the intensity to higher levels by supplementing the general super-lighting with concentrated lighting from No. 88 "Hippo" units.

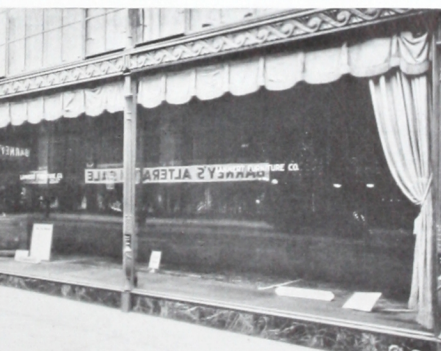
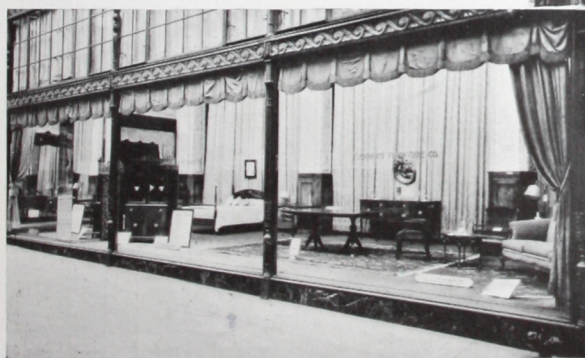
NOTE: If window backgrounds are made of a neutral tone or as light in color as is practical to satisfactorily show up the merchandise, it will help materially to reduce daylight reflections in the plate glass. (See suggestions on page 25.)



Reflections in the glass make it impossible to see the display.



The same window "super-lighted" with X-Ray Reflectors.



The two sets of actual photographs on this page register accurately through the eye of the camera the difficulty of seeing merchandise in windows troubled with plate glass reflections. The complete change, enabling the display to be seen, is brought about by "super-lighting" with X-Ray Reflectors. Reflections that are the most difficult to overcome will almost invariably be found in windows that have a dark background. This creates the same mirror-like effect in the plate glass as is produced by a piece of polished black marble.

No. 53 "Thrifty-Three" for three 100-Watt Lamps

*A Lighting Appliance
that makes practical, effective show
window lighting at low cost available
for the small store.*

Complete with all parts
needed, except lamps.

DIMENSIONS

Length Overall 39½".
Length of CurtiStrip 36".
Height from bottom of re-
flector to top of Curti-
Strip channel, 8½".

Maximum suspension with
two universal hangers (in-
cluded) is adjustable from
12" to 42" overall.

Code Word: THRIFTY

Each "Thrifty-Three" has three No. 310 "Favorite" Reflectors, CurtiStrip Wire Channel with three lamp sockets and holders, a plug-in outlet to provide current for a floodlight or another "Thrifty-Three," and two universal hangers.

Complete with wire (either wired or unwired as required) and all parts needed (except lamps) ready for immediate use.

STANDARD PACKAGE

One "Thrifty-Three" in a convenient carton weighs 16 pounds.

"THRIFTY-THREE" is a low priced lighting appliance that provides economical and effective lighting for small stores, the same as is used in the larger stores. The three "Favorite" X-Ray Reflectors deliver more light on a display than any other equipment using three 100 watt lamps. No longer is it necessary for the small merchant to use makeshift equipment that provides only *poor* show window lighting at *best*. The real photographs on

page ten show a true comparison between good lighting that SELLS and *Poor* lighting that not only costs real money for current, but actually *loses* sales! With the same amount of current "Thrifty-Three" will provide approximately three times more light on the display than bare lamps, and more than double the light where glass globes enclose the lamp (see table page 12). No wonder windows lighted with X-Ray Reflectors sell MORE goods !!

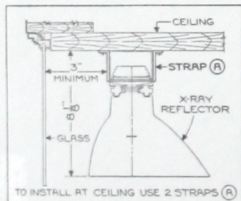


Figure 1. To mount at ceiling.

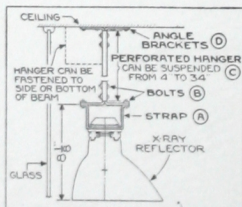


Figure 2. To suspend from ceiling.

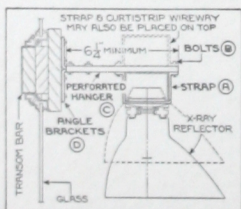


Figure 3. Mounted at transom bar.

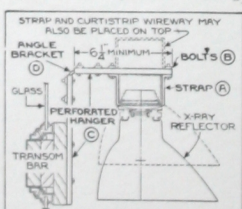


Figure 4. Angle support mounting.



No. 310 "Favorite" 100 Watt Lamp

For windows of average small store

Suggestions for Planning—Pages 9-15

Holder Required is Form "O" 2 1/4".

DIMENSIONS

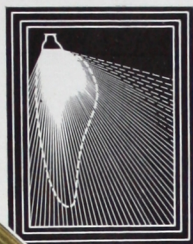
Diameter 7".

Height of reflector only 5 3/8".

STANDARD PACKAGE

Standard Package of 20 Reflectors
only, weighs 26 pounds.

Code Word: FAVORITE



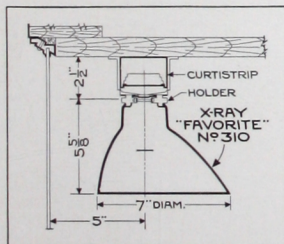
X-RAY
Reflectors

HOW much is a show window worth? It may be difficult to estimate, but all merchants value them as a tremendous sales-advertising medium. Chain stores particularly appreciate this because it is through their show windows that they command attention. Chain stores plan their lighting carefully. The locations for chain stores are selected based not only on the market in that community but on circulation—the number of people who pass. The

circulation value of a show window is comparable to the circulation of the local newspaper. The show window, however, offers the very *best* advertising space in town. No merchant will give up his window display space, neither can he afford to light his windows with makeshift equipment. Such lighting not only costs real money but actually loses sales (see page 10). Insist on lighting with X-Ray Reflectors. "Standard for Show Windows."

Other uses for the No. 310 "Favorite" besides show window lighting (see pages 33-35) include:

Display Rooms, Stores, Shops: *Interior Displays, Style Shows, Stock Quotation Board, Race Track: "Betting Odds" Board Lighting, Churches: Sanctuary, Baptistry, also Lighting Complete Church or Side Aisles from Reflectors Mounted Behind Corbels, Wall Panel Lighting, Lighting Small Stages: Schools, Lodges, Clubs, Gasoline Service Station Display Lighting.*



Drawing shows No. 310 mounted on No. 5 socket with No. 12100 Form "O" 2 1/4" Holder (page 74). CurtiStrip wireway (pages 36-40) is supported to ceiling by No. 9 strap.

For recessing above ceiling use Finishing Flange No. 14310 (page 30).

Color equipment is not available for No. 310.





No. 400 "Jack" 150 Watt Lamp

For average size deep windows

(Suggestions on Planning—Pages 9-15)

Holder Included is Form "X".

DIMENSIONS

Width 8½". Depth front to back 8".
Height including the Holder 8⅝".

STANDARD PACKAGE

Standard package of 10 reflectors
and holders weighs 21 pounds.

If 100-watt lamp is used, a short
(¾") socket extension is required.

Code Word: JACK

NO merchant would now think of lighting his modern shop windows with candles or kerosene lamps, yet in many stores the electric lighting equipment is just as ineffective and obsolete. Bare or exposed lamps are a detriment—an expense. Instead of having attention concentrated on the merchandise the eye is distracted to the bright lamp.

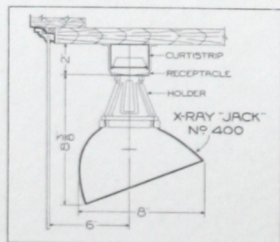
Lamps used in show window reflectors should be of the size and type for which the reflector was de-

signed. Otherwise, the distribution or control of light will be entirely different than that required.

Light costs *less* with X-Ray Reflectors. Readings on a "Sight Meter" (page 8), which may be borrowed from most power companies or lighting men, will show the economy of using X-Ray Golden Armored Reflectors. They deliver always the same quantity and quality of light. They are the finest reflector made, the standard for show window lighting!

Other uses for No. 400 "Jack" besides show window lighting (see pages 33 to 35) include:

Style Shows. Interior Displays: *In Stores, Shops, Sales Rooms. In Churches: Altar, Chancel, Choir, Memorial Window Lighting. Exhibits, Conventions and Expositions. Rug Rack Lighting. Museums and Natural Science Exhibits. Stage Lighting. Mural Paintings: Lighting Wall Panels and Scenic Effects. Artificial Lighting thru Windows for Daylight Effect.*



Drawing shows No. 400 mounted on CurtiStrip (pages 36-40). Scale Details on pages 81-82.

For recessing above ceiling use Finishing Flange No. 11400 (page 30). Bottom of reflector is on angle of 20° with horizontal.

The "dimpled" reflector makes it easy to use color lighting or "Louvers" (pages 31, 32).





No. 410 "Jill" 150 Watt Lamp

For average size shallow windows
(Suggestions for Planning—Pages 9-15)

Holder Included is Form "X".

DIMENSIONS

Width $9\frac{3}{8}$ ". Depth from front to back $9\frac{1}{2}$ ".

Height including Holder $8\frac{1}{2}$ ".

STANDARD PACKAGE

Standard package of 10 reflectors and holders weighs 25 pounds.

If 100-watt lamp is used, a short ($\frac{3}{8}$ ") socket extension is required.

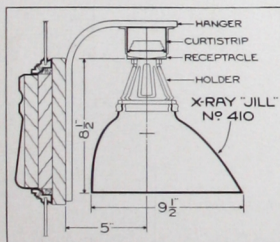
Code Word: JILL

THE first shop window reflectors introduced under the tradename "X-Ray Reflectors" were referred to as "Show Window Searchlights." From the early pioneering in this important field of modern lighting applications, Curtis Lighting has developed the many practical ideas that are accepted practice today: Color-lighting, high-lighting and spot-lighting, show window footlight equipment, super-lighting for overcoming daylight reflections in show windows, re-

cessed lighting equipment, louvers, panel lighting and CurtiStrip. CurtiStrip saves time and money with its exclusive features and flexibility for easily adding outlets even after it is installed. X-Ray show window reflectors are made with dimples, a feature that makes it possible to use color equipment and louvers singly, or together. One does not interfere with the use of the other. They can be provided when making initial installation or at any time when needed.

Other uses for No. 410 "Jill" besides show window lighting (see pages 33 to 35) include:

Stage Lighting. Display Rooms, Stores, Shops: *Interior Displays and Settings.* Indoor Athletic Courts: *Squash, Handball, Tennis.* Churches: *Sanctuary, Choir, "Show-Up" Rooms* in Police Courts and Jails. Lighting Paintings and Wall Panels in Public Buildings. Style Shows. Exhibit Booths: at Conventions and Expositions. Stock Quotation Board Lighting.



Drawing shows No. 410 mounted on CurtiStrip with No. 15 Hanger (page 39). Scale Details on pages 81-82.

For recessing above ceiling use Finishing Flange No. 11410 (page 30). Plaster-Ring is No. 14006.

"Color-Ray" No. 441 for color lighting (page 32).

For "Louvers"—Page 32.





No. 500 "King" 200 Watt Lamp

For average size deep windows
(Suggestions for Planning—Pages 9-15)

Holder Included is Form "X".

DIMENSIONS

Width 10". Depth from front to back 10½".

Height including Holder 10".

STANDARD PACKAGE

Standard package of 10 reflectors and holders weighs 30 pounds.

Code Word: KING

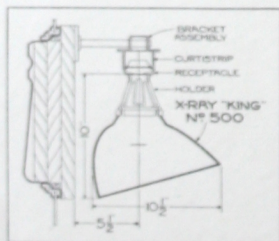
X-Ray
reflectors

X-RAY Reflectors are designed for accurate light control and maximum light output at all times. They are made of the clearest quality of crystal glass processed with a pure silver reflecting surface and then Golden Armored to insure long life. This new process in protecting the silver against chemical reaction, discoloration or amalgamation was perfected in Curtis research laboratories during many years of practical and laboratory tests. By always

maintaining their original reflecting surface, X-Ray Reflectors guarantee minimum cost with most permanent and satisfactory results. X-Ray Reflectors are produced by a trained and experienced organization with factories in the United States, Canada and Europe. Cooperation in developing or planning modern lighting is available through the electrical trade and Curtis Lighting representatives located in all of the principal cities of the world.

Other uses for No. 500 "King" besides show window lighting (see pages 33 to 35) include:

Rug Rack Lighting. Displays and Exhibits: For Conventions and Expositions. Lighting thru Artificial Windows for Day-light Effect. Indoor Tennis and Athletic Courts. Chancel, Choir, Altar or Memorial Window Lighting in Churches. Large Display Cases or Style Reviews. Displays in Shops and Stores. Bowling Alley Lighting.



Drawing shows No. 500 mounted on CurtiStrip with No. 24 Bracket Assembly (page 39). Scale Details on pages 81-82.

For recessing above ceiling use Finishing Flange No. 11500 (page 30).

The "dimpled" reflector makes color lighting and "Louvers" easy to use at any time (pages 31, 32).





No. 510 "Queen" 200 Watt Lamp

For average size narrow windows

(Suggestions for Planning—Pages 9-15)

Holder Included is Form "X".

DIMENSIONS

Width $10\frac{1}{2}"$. Depth from front to back $10\frac{3}{4}"$.

Height including Holder $10\frac{1}{4}"$

STANDARD PACKAGE

Standard package of 10 reflectors and holders weighs 38 pounds.

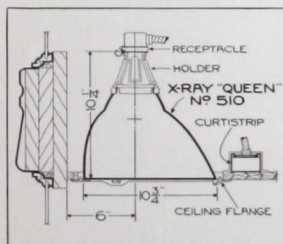
Code Word: QUEEN

THE real test of a good window display is "will it sell goods?" If it does, it is good regardless of whether it is simple or elaborate. Well lighted windows "stop the shopper." The small increase in the cost of better lighted show windows is more than compensated by the increased sales. Show windows are not limited to the sale of merchandise, they even sell the *services* of banks, investment houses and the idea of using telegraphic service for quick action.

The flow of shoppers from one side of the street to the other is influenced by the show window lighting. People are attracted by light. Theatres and the "Great White Ways" everywhere demonstrate this fact beyond a doubt. Even though you feel you are planning ample lighting in your show windows for the future, provide service wires or extra circuits for adding portable equipment (pages 45-53). These will increase the effectiveness of every show window.

Other uses for No. 510 "Queen" besides show window lighting (see pages 33 to 35) include:

Lighting Playing Wall of Handball and Squash Courts. Building Front and Entrance Lighting: From Recessed Equipment. Churches: Chancel, Choir, Lighting Complete Church or Side Aisles from Reflectors Mounted Behind Corbels. Aquariums and Natural Science Exhibits. Stage Lighting. Police Court and Jail "Show-Up" Rooms. Play-by-Play Sports News Boards.



Drawing shows No. 510 recessed above ceiling of window using No. 11510 Finishing Flange (page 30). Plastered ceilings require Plaster Ring No. 14007 (page 30). Scale Details on pages 81-82.

This reflector has dimples that make it easy to use color lighting with "Color-Ray" and "Louvers" (pages 31, 32).



No. 900 "Giant" 500 or 300 Watt Lamps

*For large, deep windows or
High Intensity "Super-Lighting"*

(Suggestions for Planning—Pages 9-16)

Holder and $\frac{1}{2}$ " Socket (with bushing
for $\frac{3}{8}$ " pipe) are Included.

DIMENSIONS

Width 13". Depth front to back 13".
Height overall including Holder and
Socket $13\frac{3}{4}$ ".

STANDARD PACKAGE

Standard package of 4 reflectors,
holders and sockets weighs 26 lbs.

Code Word: GIANT



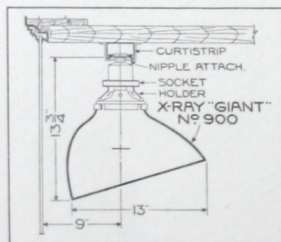
**X-Ray
Reflectors**

THE value of show windows during the daytime is frequently lost because daylight reflections make a "mirror" of the plate glass. Super-lighting, introduced by Curtis engineers, increases the light in the window to an intensity that reduces these reflections and makes it possible to see the display. (See photographs on page 16.) To overcome daylight reflections in average size windows install No. 900 "Giant," No. 910 "Leviathan," or No. 1010 "Blimp"

on approximately 15-inch centers, (large windows may require two rows of reflectors), wired on two circuits. During the daytime light all lamps. At night, except on brightly lighted streets, only half of the lights may be necessary. Tests show that 93% more people stop at a window super-lighted in the daytime (300 watts per running foot of glass) than windows lighted to average intensities. Read pages 16 and 24 when planning show window alterations.

Other uses for No. 900 "Giant" besides show window lighting (see pages 33 to 35) include:

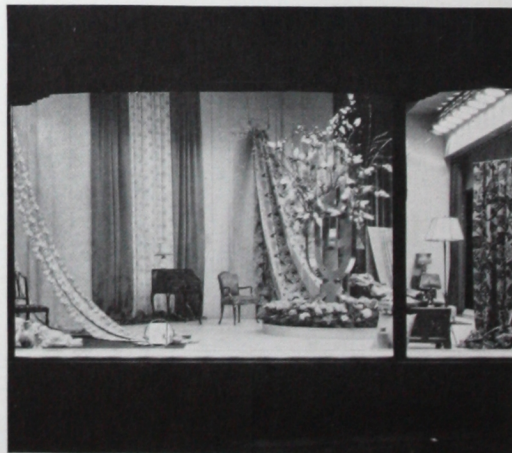
High Intensity Lighting:—Indoor Tennis Courts and Other Indoor Athletic Courts: Reflectors Lowered to Conceal Lamp from View. Rug Rack Lighting. Stage Lighting: For Theatres, Night Clubs. Lighting Large Scenic Effects, Signs, etc.; In Convention Halls, Auditoriums, Public Markets; General Illumination and Lighting the Various Merchants' Stalls.



Drawing shows No. 900 mounted on CurtiStrip with No. 19BX Fitting (page 38). Scale Details on pages 81-82.

Recessing with Finishing Flange No. 10432. Bottom of reflector is on angle of 17° with horizontal.

The "dimpled" reflector makes color lighting and "Louvers" easy to use at any time (pages 31, 32).





No. 1010 "Blimp" 500 or 300 Watt Lamps

*For large size narrow windows or
High Intensity "Super-Lighting"*

(Suggestion for Planning—Pages 9-16)

Holder and $\frac{1}{2}$ " Socket (with bushing
for $\frac{3}{8}$ " pipe) are included.

DIMENSIONS

Width 13". Depth front to back 13".

Height including holder and socket $12\frac{3}{8}$ ".

STANDARD PACKAGE

Standard package of 4 reflectors,
holders and sockets weighs 26 lbs.

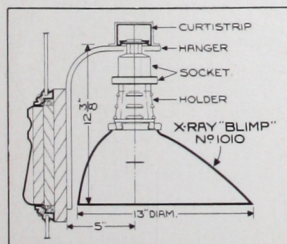
Code Word: BLIMP

THE color of backgrounds and floors requires important consideration in planning show windows and store fronts. Backgrounds of neutral tone are generally to be recommended in preference to dark woodwork, such as mahogany. Windows with light colored backgrounds always seem to be brighter than similar windows with dark backgrounds that are lighted with the same size lamps and reflector equipment. Light backgrounds give a

certain cheerfulness to the display and reflect more light than dark woodwork. "Daylight-reflections" are less prominent in windows with backgrounds of light neutral tones, while windows with dark backgrounds, mahogany as an example, will almost always be found to present the greatest difficulty from daylight reflections. A plate glass window in front of a dark background provides a polished surface with same mirror-like effect as glossy black enamel.

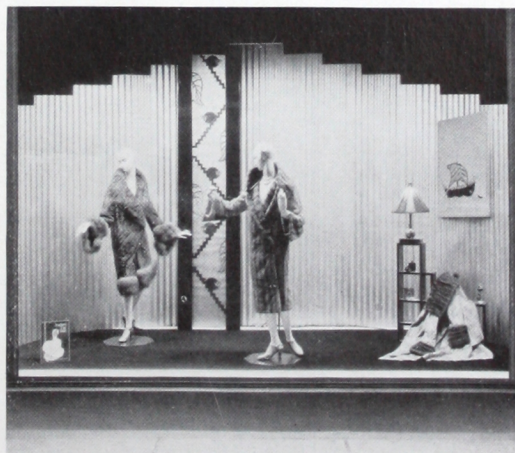
Uses for No. 1010 "Blimp" besides show window lighting (see pages 33 to 35) include:

Stage Lighting: Theatres and Large Auditoriums. High Intensity Lighting: Indoor Athletic Tennis and Handball Courts. Churches: Sanctuary and Choir Lighting. Sports Lighting: Boxing and Wrestling Rings, Reflectors with Louvers Mounted on CurtiStrip Round Entire Ring. Complete Fixture Suspended on Cable for Raising or Lowering.



Drawing shows No. 1010 mounted on CurtiStrip using No. 19 fitting (page 38). No. 15 Hanger (page 39) supports CurtiStrip from transom bar.

For recessing with No. 14110 Flange cut round ceiling hole $13\frac{1}{2}$ " diameter. Reflector has "dimples" for using "Color-Ray" and "Louvers" (see pages 31, 32).



X-RAY
Reflectors



No. 910 "Leviathan" 500 or 300 Watt Lamps

*For large size narrow windows or
High Intensity "Super Lighting"*

(Suggestions for Planning—Pages 9-16)

Holder and $\frac{1}{2}$ " Socket (with bushing
for $\frac{3}{8}$ " pipe) are Included.

DIMENSIONS

Width 13". Depth front to back 13".
Height overall including holder and
socket 14 $\frac{1}{2}$ ".

STANDARD PACKAGE

Standard package of 4 reflectors,
holders and sockets weighs 29 pounds.

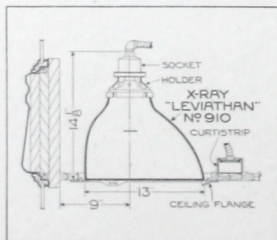
Code Word: LEVIATHAN

MANY stores have rather small or limited frontage, but effective lighting gives them prominence. Deep or roomy entrances with balanced windows give the advantage of additional frontage for small or large stores (see photograph on page 2). Light plays an important part in bringing people into "arcade" types of store front. X-Ray Reflectors are especially suited to this problem. They conceal bright lamps from view and are provided with

dimples (page 31) so that accessories, such as louvers and color equipment, can be installed at any time after the original installation has been made. They can be recessed or mounted on CurtiStrip, the standardized wireway which makes installation possible in less time at a considerable saving. It offers the flexibility of easily providing additional outlets in just a few minutes at any time, for spotlights or floodlights, without the necessity of rewiring.

*Uses for No. 910 "Leviathan" besides show
window lighting (see pages 33 to 35) include:*

Lighting Boxing Arenas: Reflectors with Louvers, Mounted on CurtiStrip Around Entire Ring Suspended on Cable for raising or lowering. Theatre and Large Auditorium Stage Lighting. Large Indoor Tennis and Athletic Courts. Sanctuary Lighting in Churches. Rotunda Lighting: From Recessed Reflectors. Reviews, Automobile and Style Shows.



Drawing shows No. 910 recessed above ceiling of window using No. 10432 Finishing Flange (page 30). Plastered ceilings require Plaster Ring No. 14008 (page 30).

Scale Details pages 81-82.

Color lighting and "Louvers" may be provided any time. Reflector has "dimples" (pages 31, 32).



No. 844 "Comet" 150* or 100 Watt Lamp

(150-watt lamp should be Inside Frosted)

For very shallow windows

(Suggestions for Planning—Pages 9-15)

Holder required is Form "A" 3 1/4"

(See Page 74)

No. 10300 for X-Ray or CurtiStrip Sockets.

No. 10400 for brass shell sockets.

No. 10500 for porcelain sockets.

*No. 10012—Holder extension required for 150 watt lamp. Can be used only with No. 10300 Holder on X-Ray or CurtiStrip sockets.

DIMENSIONS

Diameter 8 5/8". Height of Reflector only, 4 3/8".

STANDARD PACKAGE

Standard package of 12 reflectors only, weighs 19 pounds.

Code Word: COMET



X-RAY
REFLECTORS

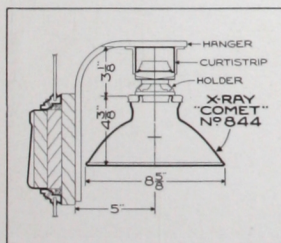


VERY shallow windows require an entirely different type of show window reflector. To light the window brightly and uniformly requires an extremely concentrating reflector such as the "Comet." Displays generally trim very high, or very low. The photograph of the drug store window is typical of the high display, also the uniform lighting provided by "Comet." The controlled light within the powerful beam gives a strong punch of light, provides high

intensity lighting at the bottom of the window, while the direct light from the lamp takes care of lighting the upper part of the window to approximately the same intensity. In windows with a low display, the concentration in the beam makes the merchandise "stand-out" effectively. Transparent signs are lighted uniformly by placing reflectors at least 1 1/2" above the top of the sign, spaced 12" o. c. Nos. 804 and 842 (pages 48-49) also used for narrow windows.

Other uses for No. 844 "Comet" besides show window lighting (see pages 33 to 35) include:

Counters in Cafeterias, Bakeries, Markets. Hospital Operating Room Lighting. In Churches: Lighting Small Altars, Stations of the Cross, Baptismal Font. Museums, Art Galleries: Equipment Recessed Individually or Above Large Skylights. Protection and Night Lighting: In Stores, Offices, Banks with Equipment Recessed in Columns or Walls.



Drawing shows No. 844 mounted on CurtiStrip with No. 15 Hanger (page 39). Scale Details on CurtiStrip, holders, and sockets on pages 81-82.

Recess with Flange No. 10517 (page 30). No Color Equipment for No. 844

For unit number with ceiling rim and glass or guard, see pages 78, 80. Holders, Sockets—Page 74.





No. 7 "Scoop Jr."

75, 60, 40 or 25 Watt Lamp

For small size, deep windows and average deep display cases

(Suggestions for Planning—Pages 9-15)

Holders required for various size lamps:

75 or 60 Watt Form "H" $2\frac{1}{4}"$

40 or 25 Watt Form "O" $2\frac{1}{4}"$

(Holders and Sockets—Page 74)

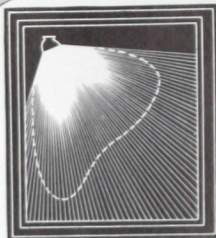
DIMENSIONS

Width 5". Depth front to back $4\frac{7}{8}"$.
Height of Reflector only, $3\frac{1}{8}"$.

STANDARD PACKAGE

Standard package of 20 reflectors only, weighs 11 pounds.

[Code Word: SCOOP JR.]

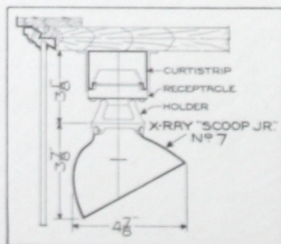


SMALL windows or display cases are treated in the same manner as larger show windows except for the fact that merchandise is generally smaller and the displays more simple. The standard sizes of window reflectors (No. 310, 400, 410) are used in smaller windows and larger display cases, but where space does not permit using these reflectors, No. 7 "Scoop Jr." or No. 11 "Hood Jr." are recommended. These reflectors are small in size and especially suited for

this purpose. Display cases and small show windows with limited space in which to conceal reflectors behind transom bar or moulding inside the case, are often installed with "Scoopette" show case fittings (pages 57-58). Where space is sufficient to recess the equipment above the ceiling, No. 11 "Hood Jr." is often used with ceiling flange as shown on page 28. This provides a very neat and effective installation. Reflectors are generally wired on two circuits.

Uses for No. 7 "Scoop Jr." besides display and show window lighting (see pages 33 to 35 and 55-56)

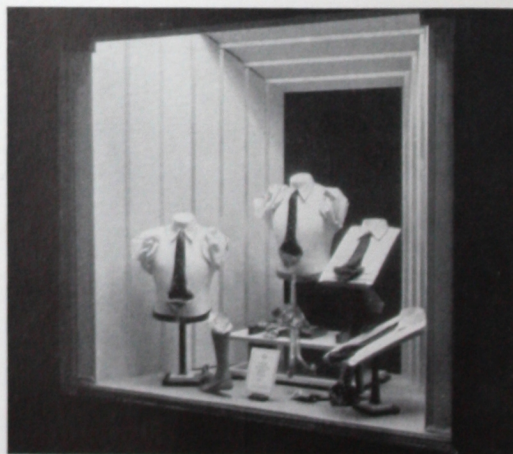
Stock Quotation Boards. In Churches: *Lighting Stations of the Cross and Niches in Altar.* Public Buildings, Museums: *Lighting Niches Containing Small Statues.* Association Exhibits. Gasoline Service Stations and Exterior Lighting: *Reflectors Concealed in Cornices of Buildings.* Lighting through Artificial Windows for Daylight Effect.

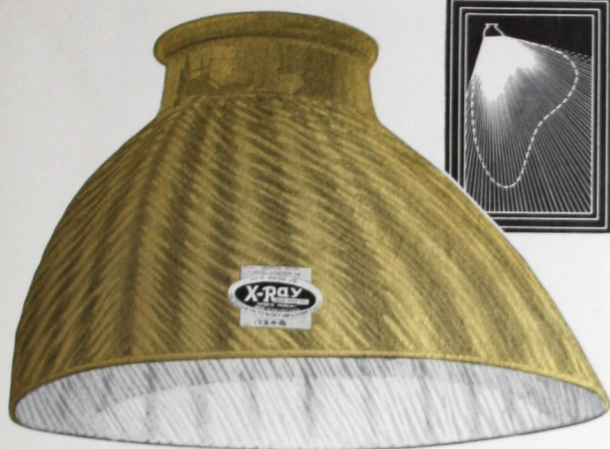


Drawing shows No. 7 on No. 5-A Socket using No. 10127 Holder on CurtiStrip with No. 9 Strap. Details of CurtiStrip, hangers and sockets on pages 36-40.

Holders for X-Ray or CurtiStrip Sockets on page 74.

Ceiling Flanges are not available for "Scoop Jr."





No. 11 "Hood Jr." 75,60,40,25 Watt Lamp

*For small, shallow windows and
average wall display cases*

(Suggestions for Planning—Pages 9-15)

Holders required for various size
lamps:

75 or 60 Watt Form "H" 2 1/4"
40 or 25 Watt Form "O" 2 1/4"
(Holders and Sockets—Page 74)

DIMENSIONS

Width 5". Depth front to back 5 1/16".
Height of Reflector only, 3 1/2".

STANDARD PACKAGE

Standard package of 20 reflectors
only, weighs 15 pounds.

Code Word: HOOD JR.

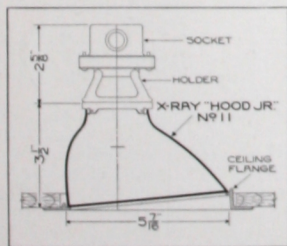
X-Ray
Reflectors

SEASONAL displays offer many interesting opportunities to "sell with light!" That's just one reason why each window should be equipped with outlets for portable equipment such as spotlights and window floodlights. These can be carried in the same CurtiStrip on which the window reflectors are installed. Convenience outlets in or near the floor of the show window provide locations in which to plug in portable footlights, spotlight units or in-

terior floodlight units. (See pages 45 to 54, and 59.) These can be concealed behind display cards for the purpose of highlighting certain parts of the display. White or color effects add zest especially to seasonal displays, limited only by the ingenuity of the merchant or his display men. By providing convenience outlets the merchant also has current available for animated displays. These outlets should be controlled by individual switches for flexibility.

*Uses for No. 11 "Hood Jr." besides display and show
window lighting (see pages 33 to 35 and 55-56)*

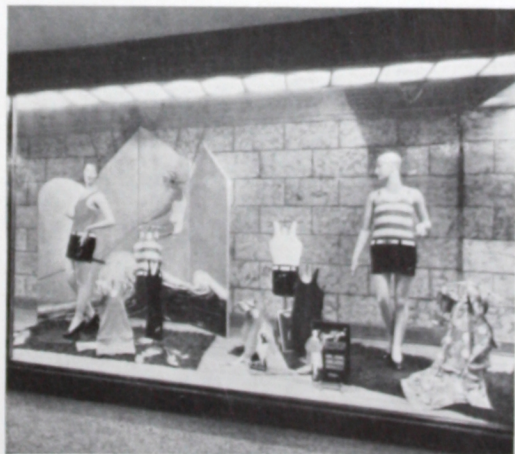
Exterior Lighting: Gasoline Service Stations, Reflectors Recessed in Cornices. Stock Quotation Boards: Reflectors Concealed by Moulding or Recessed. Advertising, Printing and Photographic Exhibits. Counters: Cafeterias, Bakeries, Markets, Churches: Stations of the Cross, Niches. Lighting Mural Paintings, Wall Panels, Scenic Effects.



Drawing shows No. 11 on
8054-SS socket, 10127
Holder (page 74) recessed
with No. 10394 finishing
flange (page 30). Flange
with Lower is No. 10594.

Scale Details on Curti-
Strip, holders and sockets
on pages 81-82.

Holders for X-Ray or
CurtiStrip sockets on
page 74.



Popular Old Types of X-Ray Reflectors

Listed for reference where additional reflectors are required on old jobs.
Always use 150-100 watt types shown on pages 17-20 on new work.

Sockets and holders listed on page 74. CurtiStrip wiring channel pages 36-40.
Finishing Flanges for Recessing Nos. 600, 610 and 731 on page 30.

Color equipment is not available for these reflectors. Use No. 400 or No. 410 (pages 19-20)
where color lighting is wanted.

No. 610 "Jupiter"

150 Watt Lamp

*For Average Size
Shallow Windows*

Holder Required is
Form "A" 3 1/4".

STANDARD PACKAGE
Standard Package of
12 reflectors only,
weighs 34 pounds.

Code Word:
JUPITER



DIMENSIONS

Width 10 1/8". Depth from
front to back 10 1/8". Height
of reflector only 7 3/4".

No. 600 "Jove"

150 Watt Lamp

*For Average Size
Deep Windows*

Holder Required is
Form "A" 3 1/4".

STANDARD PACKAGE
Standard Package of
12 reflectors only,
weighs 33 pounds.

Code Word:
JOVE



DIMENSIONS

Width 10 1/8". Depth from
front to back 9 3/4". Height
of Reflector only 7 3/4".

No. 731 "Hood"

100 Watt Lamp

*For Small Shallow
Windows and Large
Display Cases*

Holder Required is
Form "H" 2 1/4".

STANDARD PACKAGE
Standard Package of
16 reflectors only,
weighs 30 pounds.

Code Word:
HOOD



DIMENSIONS

Width 8 3/8". Depth front to
back 9". Height of reflector
only 6 1/2".

No. 778 "Scoop"

100 Watt Lamp

*For Small Deep
Windows and Large
Display Cases*

Holder Required is
Form "O" 2 1/4".

STANDARD PACKAGE
Standard Package of
24 reflectors only,
weighs 37 pounds.

Code Word:
SCOOP



DIMENSIONS

Width 7 1/2". Depth front to
back 7 1/8". Height of reflector
only 6 1/8".

No. 750 "Poke Bonnet"

Two 60, 40 or 25 Watt Lamps

For Low Deep Windows and Display Cases

Special
Holder and
Twin Socket
with 18" of
wire and plug
is included.

STANDARD PACKAGE
Standard Package of 8 reflectors,
holders, and twin sockets with
cord and plug weighs 26 pounds.

Code Word:
POKE BONNET



DIMENSIONS

Width 14". Depth
front to back (including
holder) 7" over-
all. Maximum height
from top of bracket
to bottom of reflector
6 1/8" overall.

No. 515 "Midget"

25 Watt (T-10) Lamp

(Standard Medium Screw Base Tubular Lamp)

*For Use Where Space
for Mounting or
Concealing Equipment
is Limited*

Special Holder is included.
This fits standard brass-shell
socket.

STANDARD PACKAGE
Standard Package of 36 Re-
flectors and Holders weighs
16 pounds.

Code Word:
MIDGET



DIMENSIONS

Reflector only—width 2 3/8".
Height 1 3/4", including "lip".
2 3/8". Length 6 1/4".

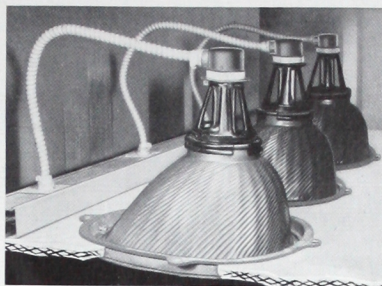
When installed with Scoop-
ette miniature conduit fit-
tings (Page 58) and standard
electroliner angle sockets, max-
imum height or depth is 3 3/8".
Length of Reflector and
Socket 8 3/4".

Finishing Flanges and Plaster Rings

for Recessing X-Ray Window Reflectors Above Ceiling of Window



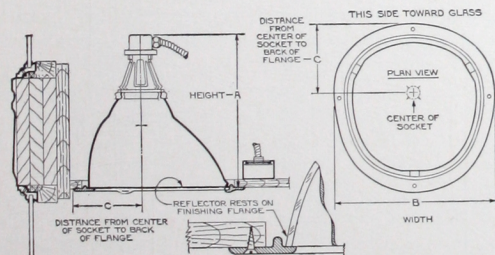
X-Ray
Reflectors



RECESSING the reflectors and wiring above the ceiling gives the window a neat appearance. X-Ray light-weight cast flanges finish off the opening, support the reflector in correct position and reinforce plywood ceilings that would otherwise be weakened after openings are cut. "Louvers" and "Color-Ray" can be used, the same as when equipment is supported from transom bar or ceiling. On newly plastered ceilings, use plaster rings described at right.

Flange No.	For Reflector	Minimum Dimensions			Std. Pkg. of 10 Weighs
		"A" Height	"B" Spacing	"C" To Socket	
10394	11 "Hood, Jr."	6 1/8"	6 1/2"	2 3/8"	9 lbs.
10594	11 "Hood, Jr." With Louver	6 1/8"	6 1/2"	2 1/2"	12 lbs.
14310	310 "Favorite"	8 1/4"	8 5/8"	3 1/8"	3 lbs.
11400	400 "Jack" Angle for Ceiling Slope—20°	9 7/8"	10 1/2"	3 3/4"	15 lbs.
11410*	410 "Jill"	10"	11 1/4"	4 3/8"	16 lbs.
11500	500 "King" Angle for Ceiling Slope—17°	11 1/2"	12"	4 3/8"	22 lbs.
11510*	510 "Queen"	11 3/4"	12 1/2"	5"	24 lbs.
10417	804	11 1/2"	12 3/4"	6 3/8"	24 lbs.
14004	842 or 848	13"	15 1/2"	7 3/4"	26 lbs.
10517	844 "Comet"	7"	10 1/2"	5 1/4"	16 lbs.
10432*	900 "Giant" Angle for Ceiling Slope—17°	14 3/4"	15"	5 5/8"	26 lbs.
10432*	910 "Leviathan"	15 1/8"	15"	6 1/2"	26 lbs.
14110*	1010 "Blimp"	13 3/8"	15"	5 1/4"	26 lbs.

*Plaster Ring available for use with this flange, Catalog No. at right. Flanges supplied unfinished, may be painted to match window ceiling.



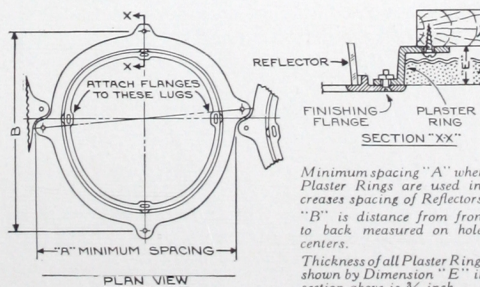
Use flange for pattern to cut opening or secure full size drawing from Curtis

X-RAY Plaster Rings (made of light weight cast iron) are used where reflectors are to be recessed above plaster ceilings. They serve as a ground to plaster to,—as a base for securely mounting ceiling finishing flanges, and make the ceiling rigid by reinforcing the lathing around the opening.

Plaster Rings are installed by the lathing contractor. Plastering contractor places final coat of plaster flush with the bottom of the "Plaster Ring." "Finishing Flanges" support the reflector in the proper position and finish off the opening in the ceiling. Lugs on the sides of Plaster Rings are placed "off-center" to allow for close spacing between reflectors. (Plaster Rings are also available for hinged rims and general lighting reflectors, pages 75-80).

Plaster Rings should be ordered early, even before reflector equipment, so they will be on the job ready for use when lathing is being done. This saves time and money.

Plaster Ring No.	For Reflector	Dimensions		Std. Pkg. of 10 Weighs	Finishing Flange Required
		"A"	"B"		
14006	410 "Jill"	12 1/2"	12 1/2"	20 lbs.	11410
14007	510 "Queen"	13 3/4"	13 3/8"	24 lbs.	11510
14008	900 "Giant"	16 1/2"	16 3/8"	25 lbs.	10432
14111	842, 848, 1010	16 1/2"	16 1/2"	26 lbs.	14004 14110



Minimum spacing "A" when Plaster Rings are used increases spacing of reflectors. "B" is distance from front to back measured on hole centers.

Thickness of all Plaster Rings shown by Dimension "E" in section above is 3/4 inch.

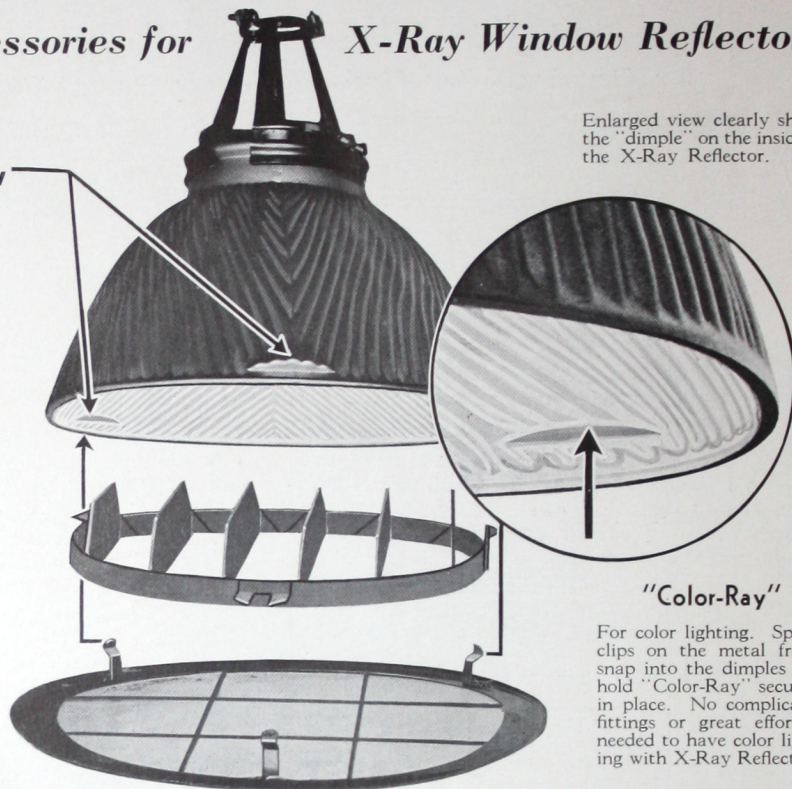
Standard Accessories for X-Ray Window Reflectors

Look for the "DIMPLES"

An exclusive feature in X-Ray Show Window Reflectors enables standard accessories to be added at any time and quickly snapped into place!

"Louver"

For concealing the light source from view. One type has the "fins" or "shields" at right angles to the glass (Type "N"). These are generally used for corner windows. The other type having fins parallel to the glass (Type "P") are generally used for island windows. Spring clips snap into the dimples and hold "Louver" securely in place.



Enlarged view clearly shows the "dimple" on the inside of the X-Ray Reflector.

"Color-Ray"

For color lighting. Spring clips on the metal frame snap into the dimples and hold "Color-Ray" securely in place. No complicated fittings or great effort is needed to have color lighting with X-Ray Reflectors.

Easily Snapped Into Place

THE dimples on X-Ray show window reflectors and interior floodlights are on the inside of the glass reflector and make it possible to easily and quickly snap accessories into place without the necessity of using any special fittings or attachments.

"Louvers" and "Color-Ray" are made with spring-clips which snap securely into the dimples. These accessories are attached on the inside of the glass, leaving a slight clearance between the accessory and the reflector for expansion and ventilation. No harness or springs to damage the reflecting surface. The use of the "Louver" does not interfere with the use of "Color-Ray." The color frame may be removed without the necessity of removing the "Louver."

The dimples in X-Ray window reflectors and interior floodlights makes it easy to use X-Ray accessories. Dimples eliminate inconvenience and avoid extra expense of adapting accessories to fit ordinary reflectors, where no thought has been given the use of accessories.

May Be Added at Any Time

ACCESSORIES for special lighting effects are generally added after the show window reflectors have been installed. But every merchant is interested to know when he buys his window reflectors, that X-Ray Reflectors have a feature in their dimples that makes it possible to *add* standard economical accessories *at any time* without going to extraordinary expense.

The locations in which "Louvers" should be used cannot always be determined until reflectors are installed. It is a simple matter to snap the "Louver" into the dimples on X-Ray Reflectors. No expensive hand-made fittings necessary.

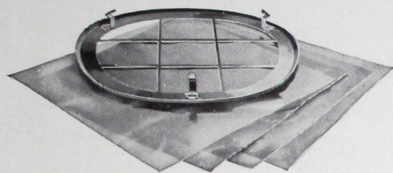
"Color-Ray" for color lighting is snapped into the dimples as easily as a lamp is put into the socket. "Louver" and "Color-Ray" are interchangeable or may be used together in the same reflector.

Dimples are an exclusive characteristic in X-Ray Reflectors. This small feature provides flexibility, economy, convenience and ease for using standard accessories at any time.

"Color-Ray"

U. S. Trade Mark Reg.

Color Equipment for Color Lighting



"Color-Ray" consists of metal frame with four sheets of colored gelatin (red, blue, green and amber).

"COLOR-RAY" is an accessory for producing color lighting effects with standard X-Ray Window Reflectors. It is a simple metal frame holding colored gelatin, that clips securely onto the reflector. It is very easy to install or to change colors in "Color-Ray."

Cat. No.	For Use With	Weight Std. Pkg.	Code Word
440	400 "Jack" (page 19).....	7 lbs.	Lily
441	410 "Jill" (page 20).....	7 lbs.	Pansy
55	500 and 510 (pages 21-22)...	7 lbs.	Aster
99	900 and 910 (pages 23-25)...	7 lbs.	Tulip
10870	1010 "Blimp" (page 24).....	7 lbs.	Clover

Color Gelatin Sheets

Size 11½" x 11½"

For Nos. 440 and 441, also Nos. 33-A, 303-A, 338 (pages 48-50)

Cat. No.	Color	Code Word
10372	Red	Rose
10373	Amber	Jonquil
10374	Green	Smilax
10375	Blue	Gentian

Size 15" x 15"

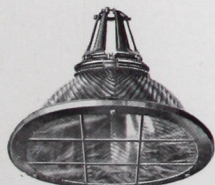
For Nos. 55, 99 and 10870, also Nos. 88, 808 and 888 (pages 49-50)

Cat. No.	Color	Code Word
10472	Red	Magenta
10473	Amber	Daffodil
10474	Green	Myrtle
10475	Blue	Ageratum

STANDARD PACKAGE: 10 sheets weigh approximately one pound.

Other uses for "Color-Ray" besides show window lighting include:

Stage Lighting: Schools, Clubs, Lodges. Interior Displays: Stores, Shops, Conventions. Exhibits: Displays, Merchandise, Scenic Effects.

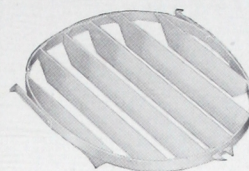


"Color-Ray" No. 440 attached to No. 400 "Jack" Reflector. "Color-Ray" for interior floodlights listed on page 53.



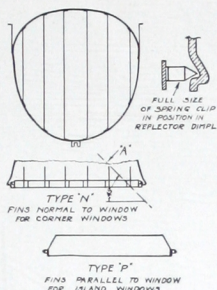
"Louvers"

For Concealing Light Source from View



STANDARD PACKAGE
"Color-Ray" and
Color Gelatins—Ten
"Louvers"—One

Each "Louver" is a Complete Unit. Finish: Gray.

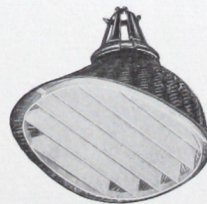


CORNER or island type windows often require a means of concealing the lamps and light from reflectors along the adjacent side. X-Ray "Louvers" are a standardized accessory that can be installed at any time in "dimpled" X-Ray Reflectors. Hinged sections of continuous "louvers" (page 15) available on order.

Cat. No.	For Use With	Weight 1 Unit	Code Word
12400-N	400 "Jack" (page 19).....	1 lb.	Adam
12410-N	410 "Jill" (page 20).....	1 lb.	Adela
12500-N	500 "King" (page 21).....	1 lb.	Agnes
12510-N	510 "Queen" (page 22).....	1 lb.	Alice
12900-N	900 "Giant" (page 23).....	2 lbs.	Edith
12910-N	910 "Leviathan" (page 25)...	2 lbs.	Celia
12110-N	1010 "Blimp" (page 24)...	2 lbs.	Emily
12410-P	410 "Jill" (page 20).....	1 lb.	Clara
12510-P	510 "Queen" (page 22).....	1 lb.	Cyril
12910-P	910 "Leviathan" (page 25)...	2 lbs.	David
12110-P	1010 "Blimp" (page 24)...	2 lbs.	Emma

Other uses for "Louvers" besides show window lighting include:

Concealing Light Source where Window Reflectors are Used: for Lighting Rug Racks, Museums, Art Galleries. Indoor Athletic Courts (page 35).



Type "N" has fins perpendicular to the glass. Type "P" has fins parallel to the glass and is the type used in island windows.

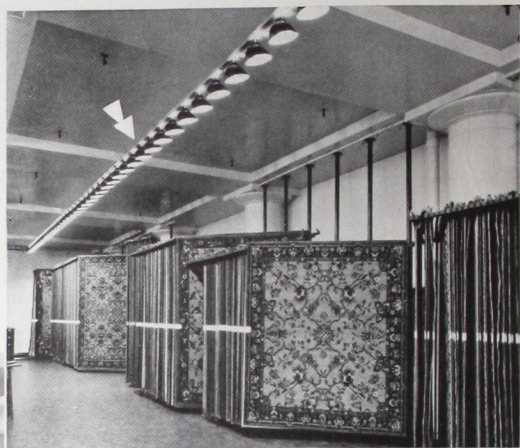
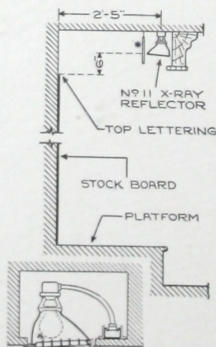
Many Other Uses for X-Ray Window Reflectors

THE X-Ray Reflector equipment designed originally for show window lighting, (pages 17 to 32), has many other applications. The many types of light control with these units suit them ideally to the applications pictured on this and the two following pages. For other problems, consider first the distribution of light you require and use this as a basis to select the reflector you need.

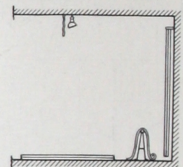


Stock Quotation Board Lighting. High intensity illumination is necessary to quickly and accurately read quotations. Use No. 11 "Hood, Jr." (page 28) with 60-watt lamp 12" o. c. mounted on CurtiStrip. May be recessed with No. 10394 finishing flange (see page 30) in a space $6\frac{1}{2}" \times 9\frac{3}{4}"$, see small diagram. If a translux (tape projector screen) is located near top of board, use narrow metal strip to baffle off direct light as shown in diagram by *.

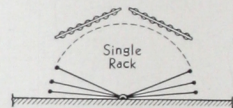
Counter Lighting. (Above) Cafeteria Counters are very intensely lighted with No. 844 "Comet" (page 26) spaced 24" on centers. The wiring on CurtiStrip (pages 36-40) provides perfect alignment without effort. Another example of counter lighting using No. 842, or No. 88 (page 49) is shown on page 51. Both types of reflectors may be recessed (pages 30, 75-80).



Rug Rack Lighting. Continuous and single racks use Nos. 400, 500 or 900 X-Ray window reflectors (pages 19, 21, and 23) mounted on CurtiStrip.



Where rugs are piled on the floor, use No. 410, 510, 910 or 1010 (pages 20, 22, 24, 25) interior floodlights (pages 45-53) or general lighting reflectors (pages 64, 69, 70).



Chancel or Choir Lighting. X-Ray show window type reflectors are mounted behind arches in churches for effective lighting. To high-light altar, use two or more No. 33-A or No. 88 (pages 48-49). Altar and memorial window photographs pages 51-52.

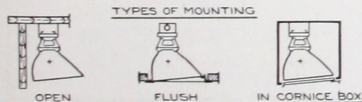


Interior Displays and Material Exhibits. No. 844 "Comet" (page 26) concealed by a moulding, confines a high intensity of light on the refrigerator display. For spot-lighting effect, No. 33-A or No. 88 with Control Ring (pages 45 to 53) are suggested.

Museums and Natural Science Exhibits. The "daylight continued" atmosphere pictured so clearly in the photograph below is produced with X-Ray Window Reflectors. Select type of Reflector same as for Show Windows (page 12).



Gasoline Service Stations. May be lighted from the building itself as is shown in the photograph at the right. Diagrams below show three methods by which this is accomplished, each using the No. 11 Hood, Jr. Reflector (page 28). No. 7 Scoop, Jr. (page 27) is also used. Both use 60-watt lamp and are generally spaced 18" on centers. Illuminates the building and station area.

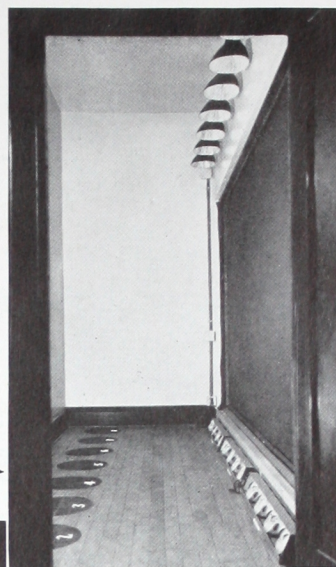


Other Uses for X-Ray Window Reflectors (Continued)

"Show-Up" Lighting for Police Headquarters and Penal Institutions.

The purpose of a "show-up" room is to enable suspects to be viewed without them seeing the spectators. Space approximately 60" deep required. Equipment used: X-Ray No. 510 reflector (page 22) 200-watt lamps (inside frosted) spaced 18" o. c. and mounted on CurtiStrip fastened to ceiling; Sections of No. 10584 Portable Footlight (page 59) with four 150-watt lamps (inside frosted) located the full length of platform floor.

The screen is black cheese-cloth. Suspects cannot see beyond this. Combination of upward and downward lighting from footlights and overhead reflectors provides ample illumination for "show-up."

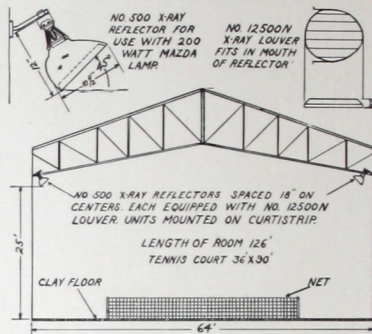


The scheme of lighting on the service stations of course varies according to its design or style of architecture. Ask any Curtis Engineer for suggestions.

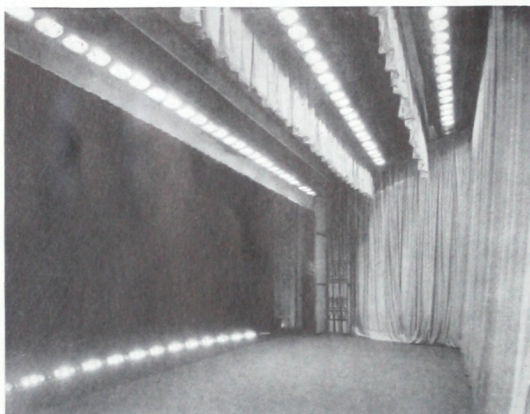


← **Indoor Athletic Courts.** Uniform illumination without glare is essential, so that players do not experience "change of speed illusion," which means the ball seems to travel faster or slower in various parts of the court according to the unevenness of the lighting.

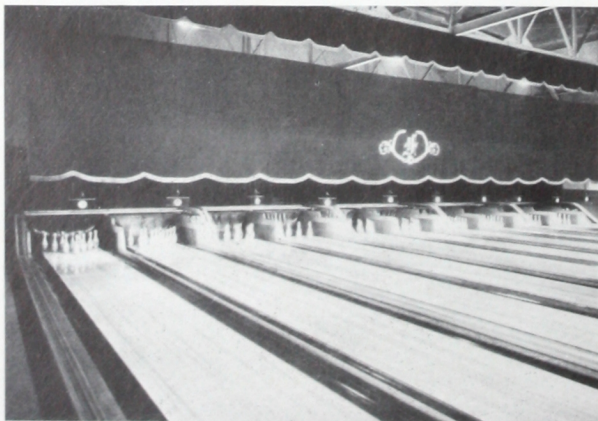
Courts are uniformly lighted with X-Ray No. 500 "King" (page 21) with 200-watt lamp 18" o. c. mounted on CurtiStrip (pages 36-40). Feed wires connected at one point on each side, eliminate the necessity of several risers. Louvers conceal the light source from view.



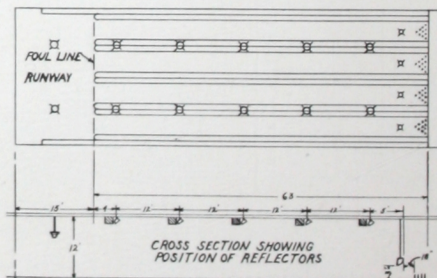
↓ **Stage Lighting.** The light-control and the "life" in the lighting with X-Ray Reflectors make them especially suitable for stage lighting. For larger stages they are built into borderlight housings. Often mounted on CurtiStrip (pages 36-40) for schools or clubs (without housing) using "Color-Ray" (page 32) for color effects.



↑ **Mural Paintings.** X-Ray Reflectors provide a higher intensity of illumination on mural paintings or wall panels, to make them "stand out." The type of reflector to use depends on size of mural, distance from wall for placing reflectors and concealment offered for reflectors. Curtis engineers will gladly assist plan Mural Lighting.



← **Bowling Alley Lighting.** Use Nos. 310, 400 or 500 reflectors (pages 18-21) concealed behind beams or valances, or Nos. 310, 410 or 510 recessed above Finishing Flanges (page 30) or Hinged Ceiling Rims (pages 76-78). No. 33-B (page 48) placed at the ceiling approximately 5 feet in front of the pins lights them to a higher intensity.



CurtiStrip

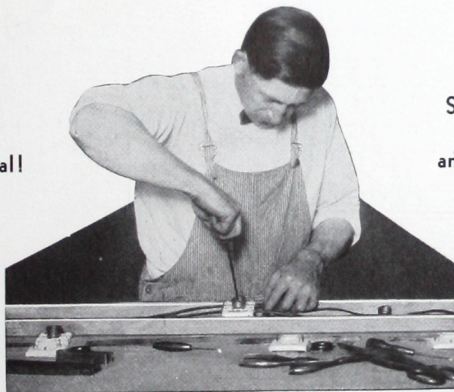
U. S. and Canadian Trade Mark Reg.

CURTISTRIP is a simplified wiring channel and race-way that offers unusual flexibility and a wide range of uses with its standardized fittings. Contractors who use CurtiStrip find it saves money and the job is always done *quicker and better*. This is due to its special sturdy construction, small number of parts, extra large wireway, and "snap-in" cover,—features which make it possible to wire and assemble CurtiStrip on the bench and to install it like a fixture. The patented "snap-in" cover permits outlets to be placed on any spacing or to add new outlets without tearing up the entire equipment. The leading contractors everywhere use and recommend CurtiStrip!

LightStrip

LightStrip is a lighting channel made by using CurtiStrip. It is the only standardized lighting channel available from local stocks that can be made to any length. Exact spacing of outlets (25 to 150 watts capacity) need not be determined in advance but can be arranged on the job. LightStrip lighting channel is small, neat and economical. All standardized CurtiStrip fittings can be used with LightStrip!

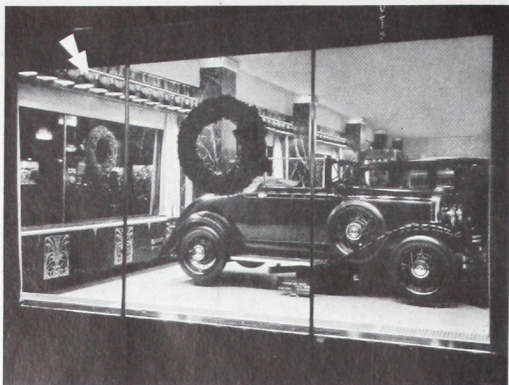
Small
Neat
Economical!



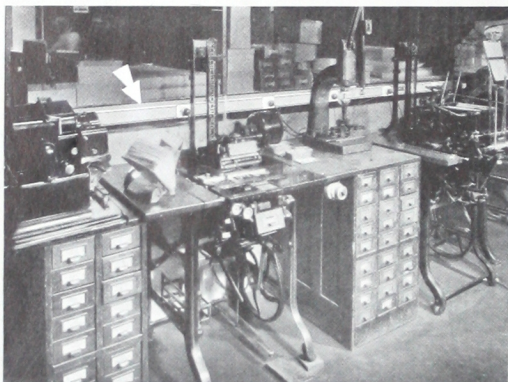
Saves Time
Labor
and Money!

Wired on the Bench!

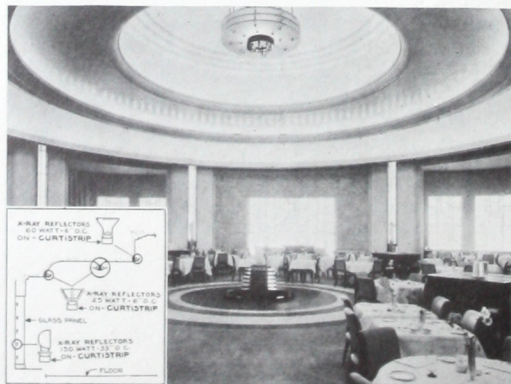
Installed Like a Fixture!!



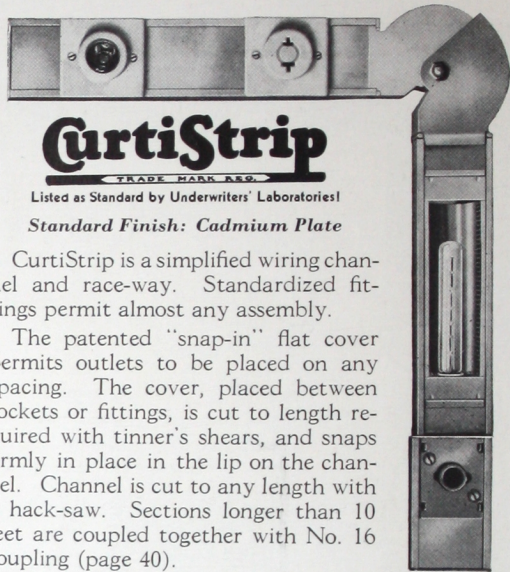
FOR SHOW WINDOWS: CurtiStrip wired on the bench, hung like a fixture with standardized hangers (see also page 13 for additional suggestions.)



FOR POWER: In stores, offices and industrial plants use CurtiStrip (polarized) receptacle No. 4 to "plug in."



RECESSED AND COVE LIGHTING: CurtiStrip is compact, fittings practical, the wiring easier and quicker.



CurtiStrip is a simplified wiring channel and race-way. Standardized fittings permit almost any assembly.

The patented "snap-in" flat cover permits outlets to be placed on any spacing. The cover, placed between sockets or fittings, is cut to length required with tinner's shears, and snaps firmly in place in the lip on the channel. Channel is cut to any length with a hack-saw. Sections longer than 10 feet are coupled together with No. 16 coupling (page 40).

Channel and cover are made of No. 20 U. S. gauge cold rolled steel Cadmium Plated, a process that presents an attractive finish and protects the metal. This surface may be painted on the job, or it can be brushed and lacquered where a "satin silver" finish is wanted.

See suggestions for using CurtiStrip to wire show windows, on page 13.

CurtiStrip Channel

CurtiStrip channel is made in only one size, $2\frac{1}{2}$ " wide, $1\frac{5}{8}$ " deep. (Full size detail page 82.)

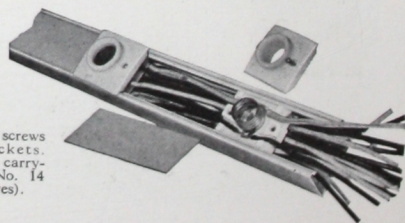
The wire way is large enough to carry as many as 30 No. 14 rubber covered wires under sockets, local inspection permitting. This is important where many circuits or a long run of outlets would otherwise make it necessary to put in additional risers at several points.

No. 1 CHANNEL WITH COVER Code Word: GUS
Standard Package 100 ft. (Ten 10 ft. lengths) weighs 130 pounds.

No. 1-A CHANNEL WITHOUT COVER Code Word: LEO
Standard Package 100 ft. (Ten 10 ft. lengths) weighs 103 pounds.

No. 1-B COVER ONLY, for No. 1-A Channel. Code Word: RAY
Standard Package 100 ft. (Ten 10 ft. lengths) weighs 40 pounds.

One spacer and socket cover removed from this section of CurtiStrip gives a clear idea how wires are laid under terminal screws of CurtiStrip Sockets. Notice the large wire carrying capacity (30 No. 14 Rubber Covered Wires).



U. S. A. Patents
1,727,772 and
1,817,034. Canadian
patents
283,493 and
283,494.

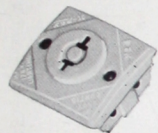
Sockets and Receptacles for CurtiStrip

CurtiStrip sockets and receptacles can be spaced as close as $2\frac{3}{4}$ " on centers. Their two-piece construction saves time and simplifies wiring.

CurtiStrip Cover spacers are cut $2\frac{1}{4}$ " shorter than the center to center measurements between outlets. Example: Outlets on 18" centers have $15\frac{3}{4}$ " spacers.



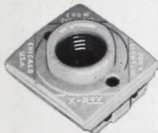
Wires are not cut, but "stripped" and laid under terminal screws along groove. Porcelain top completely covers bare wire. Not necessary to compound terminals.



No. 4 PLUG-IN PORCELAIN RECEPTACLE (15A-125 V, 10A-250 V dead front). Code Word: TOM

Overall height in CurtiStrip $2\frac{3}{4}$ ".
Standard Package of 10 weighs 7 pounds.

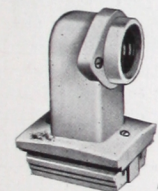
No. 4 Plug-In



No. 5 STANDARD PORCELAIN SOCKET with shade holder groove for use with X-Ray Reflectors having Form "X" holders and for all other standard shade holders used on porcelain sockets. Code Word: KEN

Overall height in CurtiStrip $2\frac{3}{8}$ ".
Standard Package of 50 weighs 27 pounds.

No. 5 and 5-A



No. 5-A SPECIAL PORCELAIN SOCKET (no shade holder groove) for use with X-Ray holders and cove lighting reflectors. Code Word: KENAA

Overall height in CurtiStrip $2\frac{3}{8}$ ".
Standard Package of 50 weighs 27 pounds.

No. 8 Angle Socket



No. 8 PORCELAIN ANGLE SOCKET for X-Ray cove lighting reflectors. Code Word: BUD

Overall height in CurtiStrip $5\frac{3}{4}$ ". Top of CurtiStrip to center of socket $2\frac{3}{4}$ ".
Standard Package of 50 weighs 47 pounds.



No. 19 Nipple Attachment

No. 19 NIPPLE ATTACHMENT ($\frac{3}{8}$ " female thread) for supporting reflectors on nipple or for use with X-Ray cove lighting reflectors. Code Word: HAL

Standard Package of 10 weighs 3 pounds.

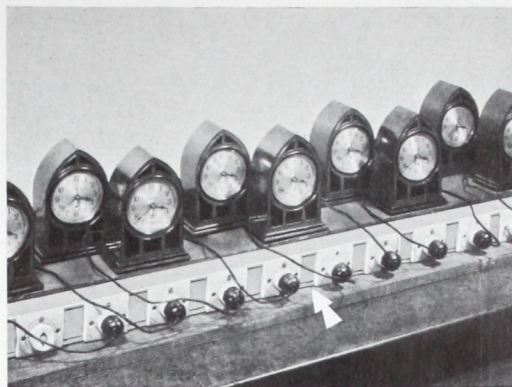


No. 19-BX Attachment

No. 19-BX ATTACHMENT to connect $\frac{1}{2}$ " BX to CurtiStrip or for attaching $\frac{1}{2}$ " socket to CurtiStrip by using chase nipple. Code Word: HALEX

Standard Package of 10 weighs 3 pounds.

Hangers, brackets and other fittings for CurtiStrip are shown on pages 39 and 40



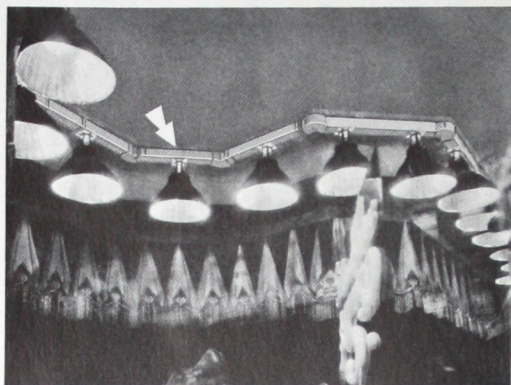
TESTING RACKS: For electric clocks and other appliances. Outlets can be placed on $2\frac{3}{4}$ " centers.



COUNTER LIGHTING: For markets, cafeterias, etc. See also pages 33 and 43 for other adaptations.



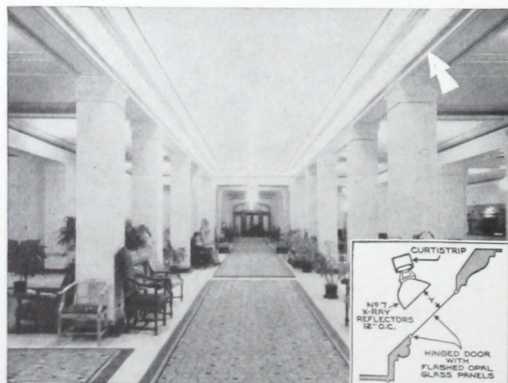
RUG RACK LIGHTING: Feed wires enter at one point, reducing cost of wiring. See also page 33.



MANY-ANGLE SHOW WINDOW: The complicated job is done as easily with CurtiStrip as a straight run (see page 13 for additional suggestions).



TESTING RACKS also enable refrigerators to be delivered "cold," ready for immediate use.

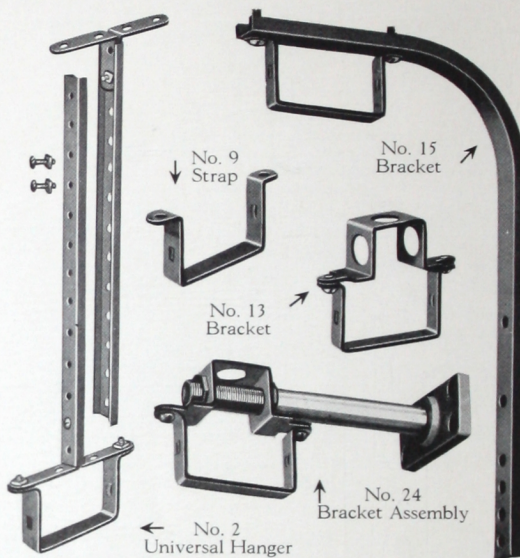


PANEL LIGHTING: Large wireway in CurtiStrip saves money. Feed wires enter at center on each side.

Supports for CurtiStrip

Standard Finish: Cadmium Plated

Five standard X-Raylets (CurtiStrip fittings) offer complete flexibility for mounting CurtiStrip. To bolt against any flat surface use No. 9 Strap. To hang down from beam or ceiling use No. 2 Hanger. This is adjustable from 4" to 34" overall. Where a chain or rigid rod hanger is to be used, the No. 13 Bracket should be substituted.



No. 2 UNIVERSAL HANGER can be made any length from 4" to 34" (see diagrams on page 17). Includes two-piece perforated hanger, one No. 9 Strap, four angle brackets and six bolts.

Code Word: JOHN

Standard Package of 10 weighs 16 pounds.

No. 9 STRAP for holding CurtiStrip against any flat surface.

Code Word: HIX

Overall spread $3\frac{1}{4}"$. Holes on $3\frac{1}{4}"$ centers.
Standard Package of 10 weighs 2 pounds.

No. 13 BRACKET to hang CurtiStrip on pipe or chain hanger (pipe or chain not included).

Code Word: DON

Height top to bottom 3"
Standard Package of 10 weighs 4 pounds.

No. 15 HANGER for mounting CurtiStrip on wall or transom bar. May be used as shown $\neg$ or reversed, thus L or $\neg$.

Code Word: ZEV

With long leg of bracket at wall the distance from wall to center of CurtiStrip is 5". Height of bracket may be varied from $12\frac{1}{4}"$ to $8\frac{3}{4}"$ or less by drilling new holes. With short leg of bracket at wall, distance from wall to center of CurtiStrip may be varied from $8\frac{3}{4}"$ to $10\frac{1}{4}"$, height varying from 5" to 7".

Standard Package of 10 weighs 11 pounds.

No. 24 BRACKET ASSEMBLY for mounting CurtiStrip out from transom bar or for suspending from ceiling. Includes $1\frac{1}{2}" \times 3"$ rectangular flange, $\frac{3}{8}"$ nipple $6\frac{1}{4}"$ long with two locknuts and No. 13 Bracket.

Code Word: SAM

Standard Package of 10 weighs 9 pounds.

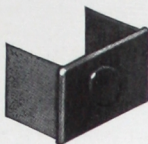
Fittings for CurtiStrip

Standard Finish: Cadmium Plated

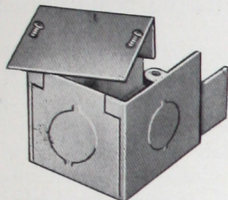
No. 6 END CAP to close and finish end of CurtiStrip. Code Word: DAR

Provided with $\frac{3}{8}$ " knockout (can be reamed to $\frac{3}{4}$ " for lead-in circuits).

Standard Package of 10 weighs 3 pounds.



No. 6 End Cap

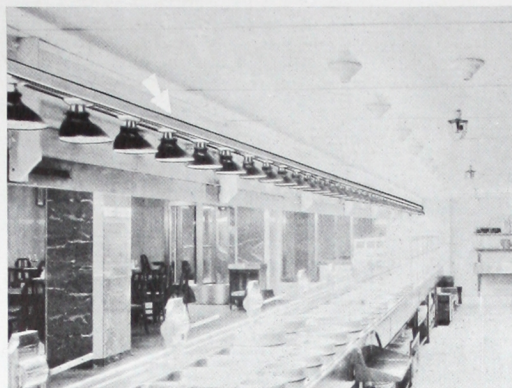


No. 12 Service Box

No. 12 SERVICE BOX used where conduit larger than $\frac{3}{4}$ " is necessary. Code Word: HOB

Has four $\frac{3}{4}$ " knock-outs (bottom, end, and two sides) that may be reamed up to $1\frac{1}{2}$ ". Size extending outside of CurtiStrip $2\frac{3}{4}$ " x $2\frac{3}{4}$ " x $2\frac{3}{4}$ ".

Standard Package of 10 weighs 12 lbs.

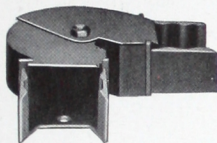


CAFETERIA COUNTER LIGHTING: CurtiStrip lines up straight as an arrow, without special effort, whether 10 or 100 feet long.

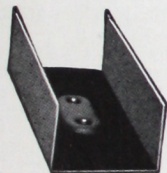
No. 14 ELBOW adjustable from 70 to 180°. Code Word: MAC

Cover is removable and eliminates fishing of wires. Separable body permits using elbow as splice box.

Standard Package of 1 weighs 3 pounds.



No. 14 Elbow

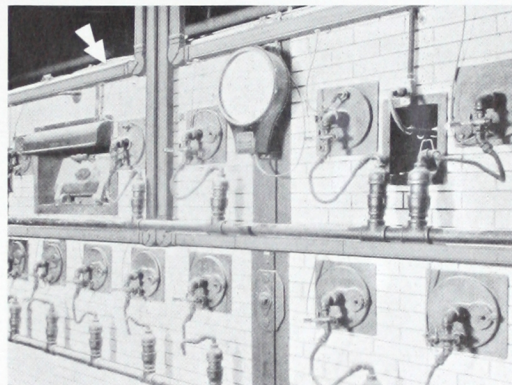


No. 16 Coupling

No. 16 COUPLING used for connecting two pieces of CurtiStrip. Code Word: JOE

Does not reduce size of wireway or interfere with use of other CurtiStrip sockets and receptacles.

Standard Package of 10 weighs 5 pounds.

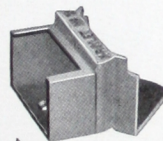


AUTOMATICALLY FIRED GAS BAKE OVENS: High tension wires must be replaced periodically. No trick to do this with CurtiStrip "snap-in" cover.

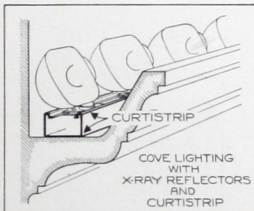
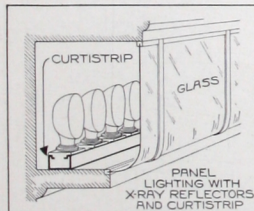
No. 18 BOX ADAPTER for connecting CurtiStrip to 4-inch standard octagonal outlet box. Code Word: JIM

1, 2, 3 or 4 adapters may be used so that CurtiStrip may be run in as many different ways from one outlet box.

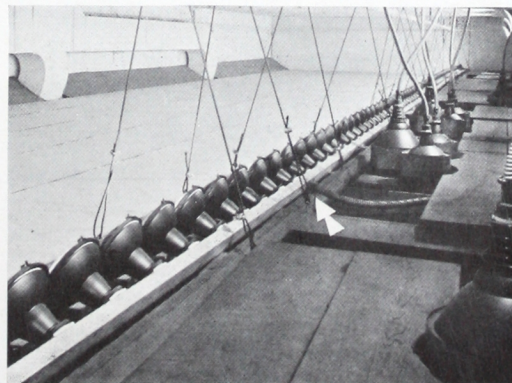
Standard Package of 10 weighs 6 pounds.



No. 18 Box Adapter



(Left) X-Ray cove lighting reflectors may be mounted on No. 5-A Socket and entire length of CurtiStrip tilted to secure correct distribution of light. (Right) Reflectors mounted on No. 8 Socket or No. 19 Nipple Attachments are adjusted individually. CurtiStrip is generally fastened with No. 9 Strap.



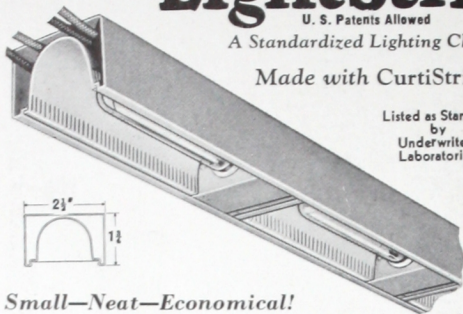
COVE OR RECESSED LIGHTING: Feed wires enter at one point, eliminating the need for several risers. (See pages 84 and 87 when planning Cove Lighting)

LightStrip

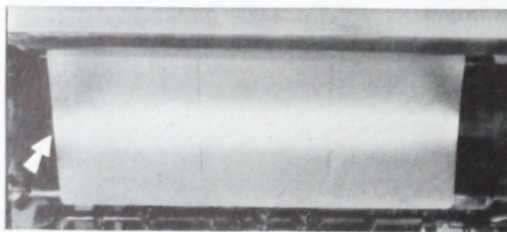
U. S. Patents Allowed

A Standardized Lighting Channel

Made with CurtiStrip

Listed as Standard
by
Underwriters
Laboratories**Small—Neat—Economical!**

EASILY CONCEALED BEHIND BEAMS: Excellent for lighting private or public Picture Galleries.



INSPECTION LIGHT: (Above) LightStrip mounted on paper making machine behind moving strip of paper shows flaws and defects. (Below) Same machine with paper removed shows LightStrip "inspection light" exposed to view.



LIGHTSTRIP is the only standardized lighting channel available from local stocks that may be made to any length with outlets spaced as required, *on the job*. It is made with CurtiStrip and LightStrip unit-assemblies, in three sizes from 25 to 150 watts capacity.

Each section of LightStrip requires the same total length of No. 1 CurtiStrip (page 37), also two No. 6 end caps (page 40) and No. 16 couplings (page 40), to connect short pieces of CurtiStrip or pieces over 10 feet long.

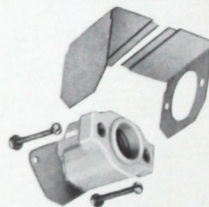
It may be a short one-light section or a longer section with many lights, up to any length needed.

It is wired on the bench the same as CurtiStrip, is easily installed, and quickly connected to the lighting circuit like a fixture. It has ample space for carrying wires. The same methods of support used for CurtiStrip (page 39) are used for mounting LightStrip. All CurtiStrip fittings and plug-in receptacles are standard for LightStrip.

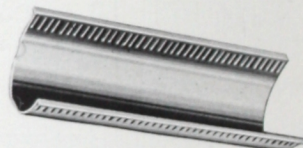
STANDARD FINISH: Reflectors are Bright Aluminum. Other metal parts are Cadmium Plated.

STANDARD PACKAGE OF ALL UNITS IS TEN

For 25-Watt T-6½—Intermediate Base Tubular Lamp



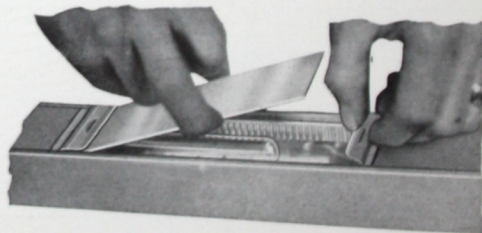
No. 26 LIGHTSTRIP UNIT ASSEMBLY includes bright aluminum reflector and intermediate base socket-unit.



No. 26 UNIT ASSEMBLY for 25-watt T-6½ intermediate base tubular lamp. Code Word: PEEWEE

Minimum spacing between units 8" o. c. Cover spacers are cut 8" less than actual center to center spacing between units.

Ten sets make a standard package weighing 4½ pounds.

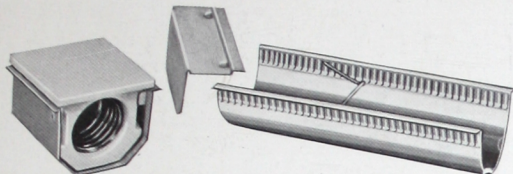


No. 260-A GLASS COVER UNIT for No. 26. Includes two metal clips (easily inserted in channel), and panel of opal glass cased on crystal. Code Word: AMY

Ten sets make a standard package weighing 3 lbs.

For 25 to 150-Watt Medium Screw Base Tubular Lamp

NO. 27 AND 28 UNIT ASSEMBLY includes bright aluminum reflector with spring clip to hold lamp, and medium screw base tilting socket.



NO. 27 UNIT ASSEMBLY for 25-watt T-10 medium screw base lamp. Code Word: BUNG

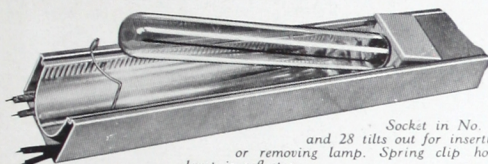
Minimum spacing between units 9" o. c. Cover spacers are cut 8 3/8" less than actual center to center spacing.

Ten sets make a standard package weighing 5 3/4 lbs.

NO. 28 UNIT ASSEMBLY for 40-watt T-8, 75 or 150-watt T-10 medium screw base tubular lamp. Code Word: POLE

Minimum spacing between units 15" o. c. Cover spacers are cut 14 3/8" less than actual center to center spacing.

Ten sets make a standard package weighing 7 lbs.



Socket in No. 27 and 28 tilts out for inserting or removing lamp. Spring clip holds lamp in reflector.

Wattage Required with LightStrip

General: The same total wattage will generally be used with LightStrip as would normally be employed.

Panel Lighting: For even lighting on flashed opal glass panels, the light source must be kept at proper distance from glass.

NARROW PANELS: Distance from front of LightStrip to glass must not be less than panel width.

WIDE PANELS: Where several rows of LightStrip are used, distance between each row must not exceed distance from front of LightStrip to glass.

NOTE: Where No. 27 or 28 are used behind glass panels, allow 1/2" of space between top of CurtiStrip and underside of glass.

For Room Illumination from panels, four watts per square foot of floor area will generally give approximately six to eight foot candles.

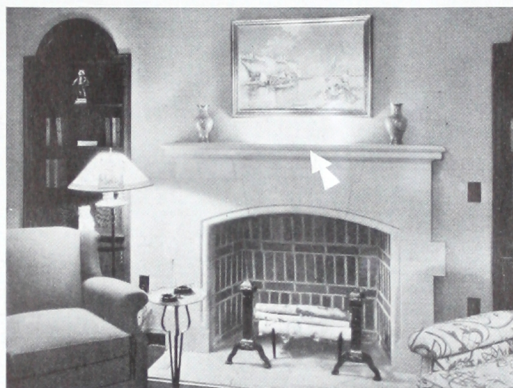
Color Lighting Effects: Wattage and spacing of LightStrip units where color lighting is wanted for effect only on glass panels, should be the same as for white lighting.

Other Uses for LightStrip besides those shown on Pages 41 to 44, include:

¶ **General:** Panel Lighting, Bulletin Boards, Bookkeepers' or Information Desks, Ticket Offices, Exhibit and Wall Cases, Small Coves, Picture Lighting. ¶ **Churches:** Small Altars, Sanctuaries, Baptistries, Cross Stations, Niches, Windows . . . **Banks, Offices and Industrials:** Counters, Cages, Mail Rooms, Maps, Exhibits, Inspection and Sorting Tables. ¶ **Schools and Libraries:** Book Racks, Laboratories, Reading and Inspection Tables, Blackboards, Drafting Rooms. ¶ **Stores and Shops:** Markets, Food Shops, Cafeterias, Display Cases, Counters, Bargain Tables, Signs. ¶ **Theatres, Auditoriums and Public Buildings:** Small Stages and Settings, Makeup Rooms, Art Galleries, Niches. ¶ **Homes:** Built-in Lighting.



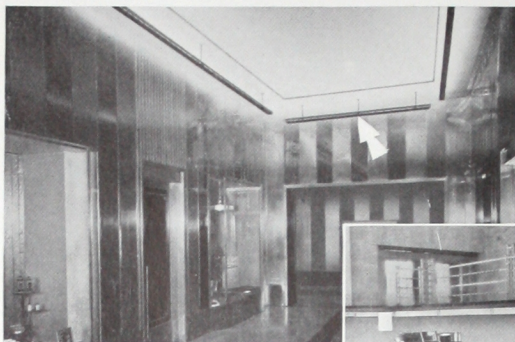
SIDE WALL LIGHTING: For library or den. LightStrip is available from local Electrical wholesalers' stocks.



HOME LIGHTING: Short section LightStrip concealed above fireplace or mantel correctly illuminates paintings.



PANEL LIGHTING: LightStrip used for side "strips" in fitting rooms, also panel lighting where space is limited.



LightStrip makes an attractive moderne unit for direct or indirect lighting in corridors, hallways, shops, restaurants.



Mounted outside refrigerated cases, LightStrip does not greatly increase temperature on inside of case.



Interesting Uses for LightStrip

(Above) Tellers' and cashiers' counters lighted with short or long sections. Lamps on any spacing required.

(Left) The small size of LightStrip ($1\frac{3}{4}'' \times 2\frac{5}{8}''$) affords many uses for panel lighting. On narrow panels, distance from front of LightStrip to glass must not be less than panel width. On wide panels, spacing between each row of LightStrip must not exceed distance from front of LightStrip to glass. (See page 42.)

(Right) Sales increased by lighting store stock-shelves with LightStrip.



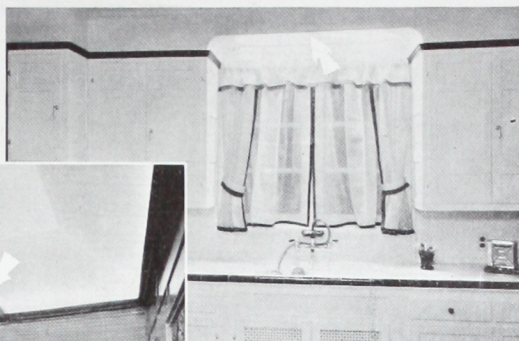
LightStrip makes an economical open counter lighting unit. Can also be mounted under display shelf such as hangs over sales-counter in drug stores, etc. Many other uses in stores.



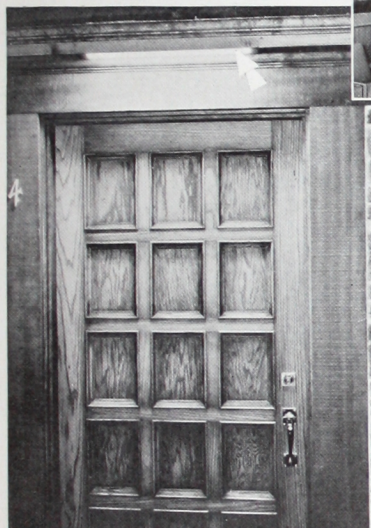
LightStrip is practical for print shops and assembling tables. Plug-in receptacles (page 38) can be provided wherever needed to provide power for electric tools or portable equipment.



Large display or exhibit cases are completely lighted by sections of LightStrip mounted under each wooden shelf.



Use LightStrip for lighting over kitchen sink or under cabinets. For convenience outlet include No. 4 plug-in receptacle.

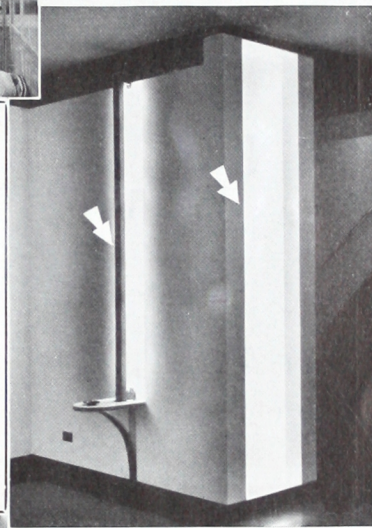


Interesting Uses for LightStrip

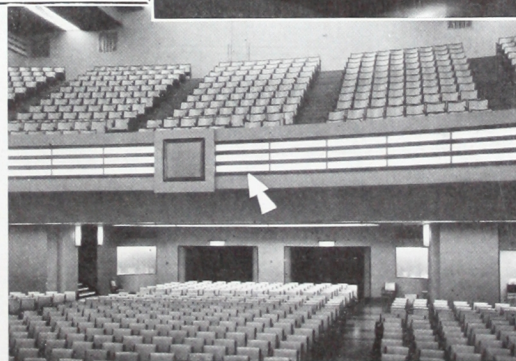
(Above) LightStrip in cornice and center beam provides complete indirect room illumination.

(Left) Short section mounted above door or concealed in beam provides correct entry lighting.

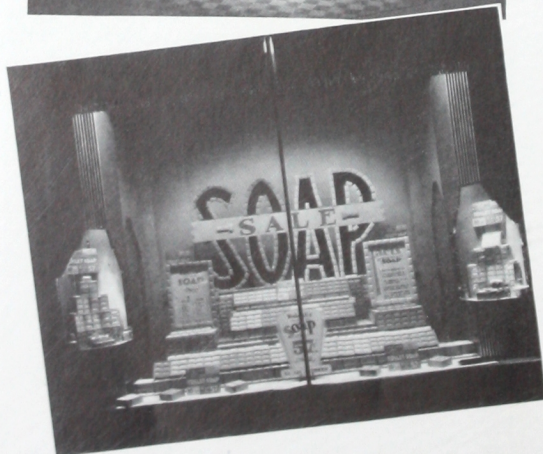
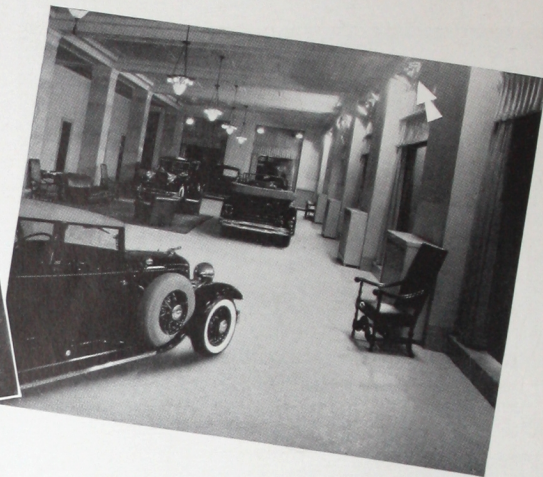
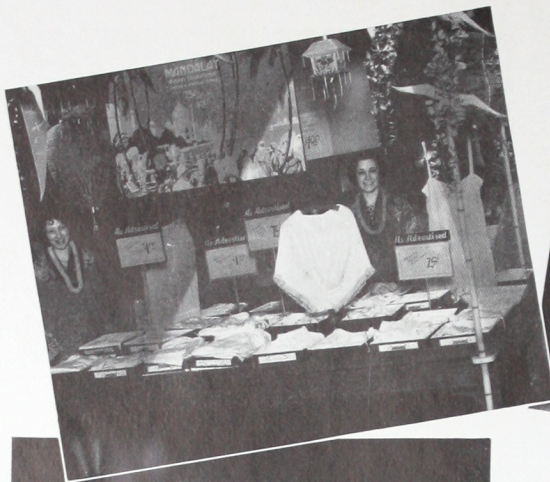
(Right) This Moderne Corridor uses two effective and attractive methods of providing moderne lighting. One section of LightStrip is used on each side of right panel. Where LightStrip is exposed, channel can be painted or brushed and lacquered to a satin silver finish.



Where space is limited, use LightStrip to light small altars and stations of the cross grouped as above, or arranged singly. No. 11 "Hood, Jr." (page 28) also used for station lighting.



Panel lighting is economical, effective and practical with LightStrip in large or small rooms, or in balcony front as shown in this photograph. See suggestions on page 42.



Interior Floodlights

for

*Highlighting and Spotting,
with or without Color Effects*

THREE types of light control give X-Ray interior floodlights a wide range of uses. The universal swivel base permits easy adjustment in the direction of the beam of light. Color frames readily clip onto the reflector for color lighting effects. Photographs on this and pages 47 to 52 will recall many uses among which may be included:

Churches: Altars, Memorial Windows, Stations of the Cross, Statues, Baptismal Fonts, Parish House Recreational Rooms.

Stores, Shops, Salesrooms: Displays, Spotlight Sales, Style Shows, Protection Lighting at Night.

Conventions and Material Exhibits: Displays, Settings, Bulletin Boards, Spectacular Effects.

Banks, Offices: Bulletin Boards, Protection Lighting at Night, Recessed Silhouette Lighting.

Hospitals: Operating, Clinic and Lecture Rooms.

Art Galleries and Museums: Statues, Exhibits, Bulletin Boards, Skylight or Recessed Lighting.

Theatres and Recreational Buildings: Lighting Orchestra, Ballrooms, Shooting Galleries, Bulletins.

Schools and Educational Buildings: In Art Classes for Highlights and Shadows; Stage Lighting.

Lodges: Ritualistic Altars, Stations, Ballrooms.

Hotels and Clubs: Ballrooms, Orchestra Spotting, Stages, Style Shows, Fountains, Food Displays.

Industrial: Stair Landings, Warehouses, Concentrating Light on Machinery from Remote Position.

Three Types of Light-Control

THREE general types of light-control are provided with X-Ray interior floodlights. The illustrations below help give a vivid picture of the distribution from each unit. These three types are briefly described as follows:

Center SPOT Beam

This combination of a "flood" and "spotlight" has a wide range of uses because of its intense concentration and wide general illumination. Small shop windows can be completely lighted with one or two of this type of unit so that the principal portions of the display are "highlighted." At the same time there is sufficient light provided for the rest of the display without making it necessary to provide other lighting equipment. In art galleries, the light controlled in the *center spot beam* is directed to the side walls to provide adequate lighting of the same general directional qualities as daylight. The general flood of light will in most cases provide ample light for general illumination over the skylight glass.

Where the general flood of light is not wanted, but instead, more of a spotlight effect is needed, use

SPOT Beam

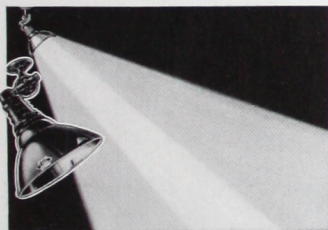
This light-control is pictured in the center. A "Control-Ring" (page 53) is used with the regu-

lar type 33-A or 88 (pages 48-49) to confine all of the light into one powerful "spot beam." This combination is generally used in store interiors for "spotlight sales" and wherever the light source should be concealed. "Control-Ring" is a louver that conceals the bright lamp from view, confining the light to the powerful "spot-beam."

Type 33-A and 88 X-Ray Interior Floodlights are referred to as commercial spotlights with universal swivel base, and are used where adjustment in the spread of the beam of light is not required. They are many times more efficient than a lens type of spotlight. The secret is in the X-Ray Reflector. It "nests" around the lamp and redirects the light from the lamp into the powerful center spot beam. However, where adjustment in the size of spot is required and efficiency is not the prime requisite, No. 315 Spotlight (page 54) is recommended. The beam of light in this unit may be focussed from 6° to 24° so that at a distance of 10 feet the "spot" can be increased from 12 to 48 inches.

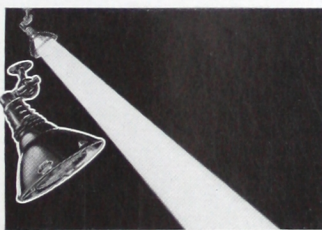
FLOOD of Light

This distribution pictured at the right is readily understood. In X-Ray interior floodlights the overall spread is approximately 100° with the greatest concentration of light in the 40° zone. The two sizes of this type of unit have a wide variety of uses.



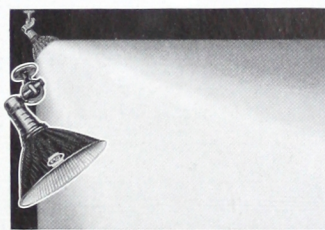
"Center SPOT Beam"

Distribution of light from Nos. 44, 33-A or 88 type, showing flood of light and "Center SPOT Beam."



"SPOT Beam"

Nos. 33-A or 88 type, with "Control-Ring" to conceal lamp, produces powerful "SPOT-Beam."



"FLOOD of Light"

Nos. 338 and 888 type Floodlights provide a wide "Flood of Light," desirable in many locations.

For Light-Control Shown Above Use This Equipment

CATALOG NO. STANDARD LAMP

On Short Swivel Base:

44	"Pup".....	150-100 watt
*33-A	"Flood-Ray".....	200 watt
33-B	"Lion".....	200 watt
*88	"Hippo".....	500-300 watt
88-B	"Tiger".....	500-300 watt

On Portable Stand 54 inches high:

*303-A	"Giraffe".....	200 watt
303-B	"Camel".....	200 watt
*808	"Pelican".....	500-300 watt
808-B	"Ostrich".....	500-300 watt

CAT. NO. CONTROL RING NO. STANDARD LAMP

On Short Swivel Base:

*33-A	with No. 13351	... 200 watt
33-B	with No. 13351	... 200 watt
*88	with No. 18860	500-300 watt
88-B	with No. 18860	500-300 watt

On Portable Stand 54 inches high:

*303-A	with No. 13351	... 200 watt
303-B	with No. 13351	... 200 watt
*808	with No. 18860	... 500 watt
808-B	with No. 18860	500-300 watt

CATALOG NO. STANDARD LAMP

On Short Swivel Base:

*338	"Leopard".....	200 watt
338-B	"Puma".....	200 watt
*888	"Zebra".....	500-300 watt
888-B	"Panther".....	500-300 watt

On Portable Stand 54 inches high:

No. 338, 338-B, 888 and 888-B can be supplied on portable stand 54 inches high, by specifying "with Portable Stand 54 inches high."

*Numbers with * are regularly supplied with Color-Frame and red, blue, green and amber gelatin for Color Highlighting. All others have no color equipment and are for white lighting only.



No. 844

is the number of reflect-
or only without swivel
base, socket and holder.
See page 26 for details.

X-Ray
reflectors

No. 44 "Pup" 150 or 100 Watt Lamp

*Concentrating Type, for
White Lighting*

(Suggestions for Planning—Page 46)

Base has Universal Adjustment.

DIMENSIONS

Diameter of Reflector $8\frac{5}{8}"$.

Depth from back of socket to front of
reflector 7" with 100-watt lamp, $7\frac{1}{2}"$
with 150-watt lamp using holder
extension (included). Diameter of
base $3\frac{1}{4}"$.

STANDARD PACKAGE

Standard package containing one
unit weighs 5 pounds.

Parts listed on page 74.

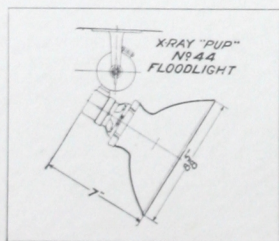
Code Word: PUP

THE use of interior floodlights for high-lighting and spot-lighting is profitable to all types of stores and display rooms whether large or small. Many retail organizations, both chain stores and independent merchants alike, feature "spot-light sales." X-Ray Interior Floodlights are used to spot-light merchandise that is advertised or specially featured, to focus or concentrate attention on them. "Spot-light sales" bring attention convincingly to

items that *save money*, increasing turnover and profits. X-Ray interior floodlights can be moved from one location to another, or mounted permanently. This portable feature makes it possible to use the units for lighting show window displays and for "spot-light sales" in the store itself. Use X-Ray "Center Spot Beam" or "Spot Beam" (pages 46 to 52) floodlights to spot-light regular or special values, or bargains and to attract attention to advertised items.

*Uses for No. 44 "Pup" in addition to appli-
cations shown on pages 45 to 52 include:*

Museums and Art Galleries: *Highlighting Statues, Directional Lighting with Units Recessed Individually or Above Skylight.* Churches: *Small Altars, Stations of the Cross, Baptistry.* Shops and Stores: *Highlighting Interior or Window Displays with Unit Concealed Behind Merchandise or Display Cards.* Theatres: *Ticket Booths.* Shops and Stores: *Fitting Rooms and Mirrors.*



For Scale Details see
page 81. Base $3\frac{1}{4}"$
in diameter has two $\frac{3}{16}"$
holes for mounting.
Hole Center to hole center
is $2\frac{1}{16}"$.

No. 44 is for white light-
ing only. For color light-
ing use No. 33-A.

With 150-watt lamp depth
from back of socket to
front of reflector is $7\frac{1}{2}"$.





No. 804

is the number of reflector only (without swivel base and socket). Holder required: No. 10800 (page 74)—use only on X-Ray or CurtiStrip sockets (page 38).

Code Word: ALADDIN

X-Ray
reflectors

No. 33-A "Flood-Ray" 200 Watt Lamp

(For smooth soft edge beam use inside frosted lamps)

Concentrating Type for White or Colored Lighting

(Suggestions for Planning—Page 46)

Base has Universal Adjustment.

DIMENSIONS

Diameter of Reflector $10\frac{1}{2}$ ". Depth, back of socket to front of reflector, $10\frac{3}{4}$ ". Diameter of Base, $3\frac{1}{4}$ ".

STANDARD PACKAGE

One unit weighs 7 pounds.

Cat. No. Code Word

33-A FLOOD-RAY

With color equipment

33-B LION

Without color equipment



Portable Unit

on 54-inch stand with heavy base and wired with 10 feet of cord with plug.

Standard Package: One, weight 31 pounds.

Cat. No. Code Word

303-A With color equipment GIRAFFE

303-B Without color equipment CAMEL

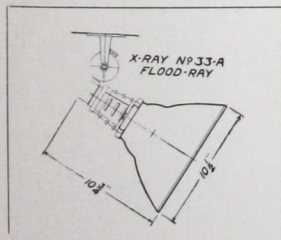
Control-Ring, color equipment or parts, pages 53, 74.

THE art of displaying merchandise combines the fine technique of theatrical display with super-salesmanship. On the stage the leading role is featured by making it "stand out" from the ensemble in a spot of light. In talking about his merchandise, the salesman in a similar way "spots" or emphasizes his particular sales points. Interior floodlights help to merchandise more efficiently by concentrating greater attention on a portion of the display with

intense white lighting or color high-lighting. Both are easily accomplished with X-Ray interior floodlights. Colored light emphasizes its own color. As an example, green color emphasizes the green in foliage and Springtime displays. Red (magenta) brings out the life and beauty of red and pink merchandise or flowers. Amber gives a feeling of warmth and is probably more generally used than any other color. Blue emphasizes night time, also coolness.

Uses for No. 33-A "Flood-Ray" in addition to applications shown on pages 45 to 52 include:

Show Window Displays. Spotlighting Counters and Merchandise: In Stores and Salesrooms. Hospital Operating Rooms. Directional Lighting for Art Galleries and Museums: With Equipment Recessed Above Skylight. Pin Lighting for Bowling Alleys. Church Altar Lighting. Altars in Lodges. Building Fronts: Silhouette or Entrance Lighting, Equipment Recessed.



Reflector has "dimples". Color equipment regularly supplied (with all except 33-B and 303-B) includes color frame with red, blue, green and amber gelatins. Cat. No. is No. 10556 (page 53).

For spotlight effect use "Control-Ring" No. 13351 (page 53).

Distributing 200-watt unit is No. 338 (page 50).





No. 842

is the number of reflector only without swivel base and socket. Holder required: No. 10414, (use only on X-Ray mogul sockets page 74).

Code Word:
ROCKET



**X-Ray
Reflectors**

No. 88 "Hippo" 500 or 300 Watt Lamp

(For smooth soft edge beam use inside frosted lamps)

Concentrating Type for White or Colored Lighting

(Suggestions for Planning—Page 46)

Base has Universal Adjustment.

DIMENSIONS

Diameter of Reflector $13\frac{1}{4}"$. Depth from back of socket to front of reflector $11\frac{1}{8}"$. Diameter of base $3\frac{1}{4}"$.

STANDARD PACKAGE

One unit weighs 12 pounds.

Cat. No.	Code Word
88 With color equipment	HIPPO
88-B Without color equipment	TIGER

Portable Unit

on 54" stand with heavy base and wired with 10 feet of cord with plug.

Std. Pkg.: One, weight 30 pounds.

Cat. No.	Code Word
808 With color equipment	PELICAN
808-B Without color equipment	OSTRICH



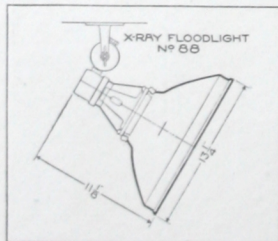
Control-Ring, color equipment or parts, pages 53, 74.

INTERIOR floodlights are used in two ways; *first*, to supplement general lighting; *second*, to provide all the lighting needed, with unusual white or color effect. Small show windows may be lighted with either the "center spot beam," the "spot of light" or the wide "flood of light," as pictured on page 46. The "spot of light" is produced in No. 33-A or No. 88 by using "Control-Ring." This confines all of the light into a single center-spot-

beam. The intensity is many times greater than the amount of light delivered from a spotlight of the same wattage. The secret is in the X-Ray Reflector, which intercepts and redirects the light produced by the lamp, into a powerful beam. Type 88 and 888 in particular, are very valuable to assist in overcoming daylight reflections in show windows by increasing intensities at the points where reflections are most objectionable (see photographs page 16).

Uses for No. 88 "Hippo" in addition to applications shown on pages 45 to 52 include:

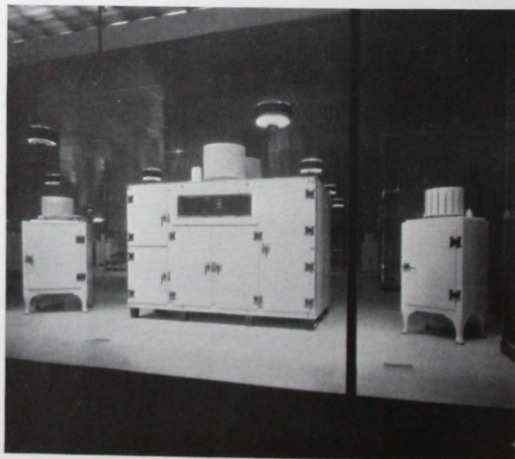
Dance Floors: Night Clubs, Ballrooms. Highlighting and Spot-lighting: Show Window and Store Displays, Church: Altar and Chancel Lighting. General Illumination: For Large Rooms Applying Principle of Indirect Lighting. Protection or Night Lighting: For Banks, Stores, Offices, Salesrooms, etc. Counters, Food Displays: In Cafeterias, Restaurants, Hotels.



Color equipment regularly supplied except with 88-B and 808-B, includes color frame with red, blue, green and amber gelatins. Catalog No. is 10470 (page 53).

Reflector has "dimples" (see page 31). For spotlight effect use "Control-Ring" No. 18860 (page 53).

Distributing 500-watt unit is No. 888 (page 50).



No. 338 200 Watt Lamp

No. 888 500-300 Watt Lamp



No. 810 is the number of reflector only (without swivel base and socket). Holder required: No. 10367 (page 74), use only on X-Ray or Curti-Strip sockets (page 38).

Code Word: SATURN

X-RAY
reflectors

Semi-Concentrating Type For White or Color Lighting Effects

Base has universal adjustment.



No. 848 is the complete unit number that includes a reflector, holder and socket (without swivel base). See page 70 for details.

DIMENSIONS

Diameter of reflector $10\frac{1}{2}$ ".
Depth from back of socket to front of reflector $9\frac{3}{4}$ ". Diameter of base $3\frac{1}{4}$ ".

Diameter of reflector $13\frac{1}{4}$ ".
Depth from back of socket to front of reflector $11\frac{1}{8}$ ". Diameter of base $3\frac{1}{4}$ ".

STANDARD PACKAGE

Standard Package one, weight 7 lbs.

Standard Package one, weight 10 lbs.

Cat. No.	With color equipment	Code Word	Cat. No.	With color equipment	Code Word
338		LEOPARD	888		ZEBRA
338-B	Without color equipment	PUMA	888-B	Without color equipment	PANTHER



SEMI-DISTRIBUTING Interior Floodlights have a very general use (pages 45, 51, 52). Their general distribution as pictured in the diagrams is a wide spread of light with great concentration in a smaller zone. The 200-watt size, No. 338, has its greatest concentration within 40° . No. 888, the 500-watt size, has its greatest concentration within 30° . Both types are used for either white or color lighting. The ease with which they are mounted and

connected to any electrical circuit gives them the advantage of being installed permanently or moved for temporary use. In conventions or expositions, booths can be effectively lighted by either the concentrating or semi-concentrating X-Ray Interior Floodlights. Portability, universal swivel adjustment, high efficiency, accurate light control and the possibility of having either white or color lighting effects are advantages that are readily appreciated.

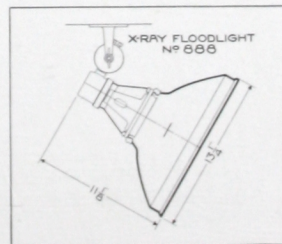
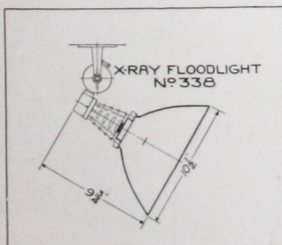
Color-Ray for No. 338 or 338-B is No. 10370 (page 53). Includes frame (and clips) with red, blue, green and amber gelatin.

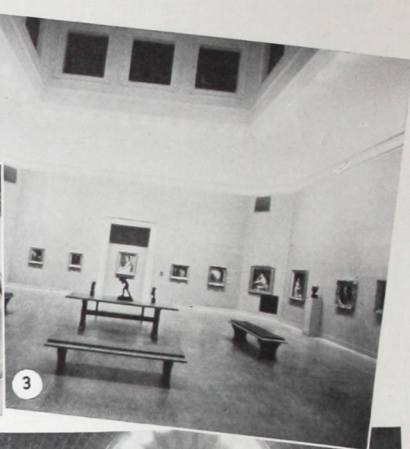
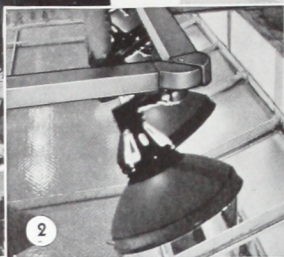
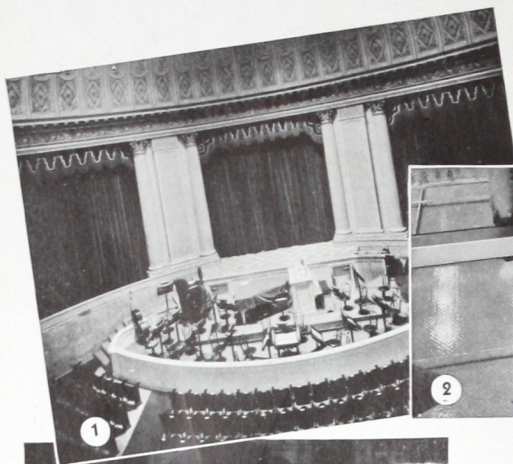
Color-Ray for No. 888 or 888-B is No. 10470 (page 53). Includes frame (and clips) with red, blue, green and amber gelatin.



Uses for Semi-Concentrating Interior Floodlights (Pages 45-52) include:

Show Windows: General Lighting, Highlighting, Overcoming Daylight Reflections (page 16). Churches: Chancel, General Lighting with Units Concealed Behind Beams; Parish House, Recreational Lighting, Memorial Windows. Automobile Show Rooms. Interior Displays: Stores, Expositions, Conventions. Art Galleries and Museums. Stage Lighting: Schools, Clubs, Lodges.

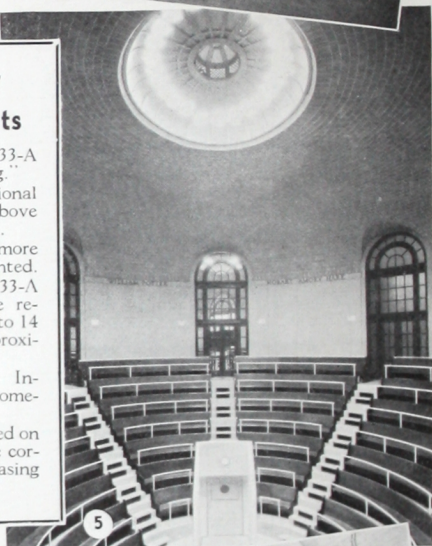


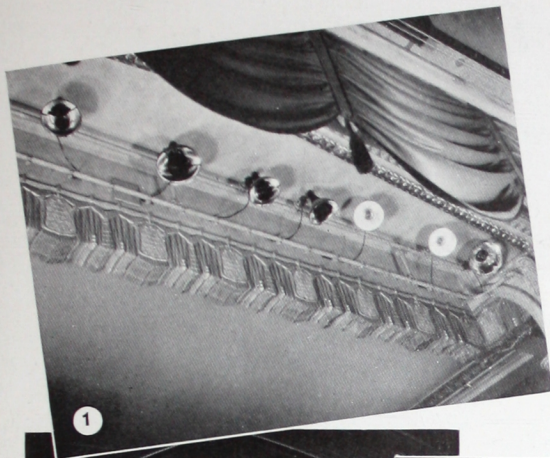


CHRISTIAN CHURCH

Interesting Uses for Interior Floodlights

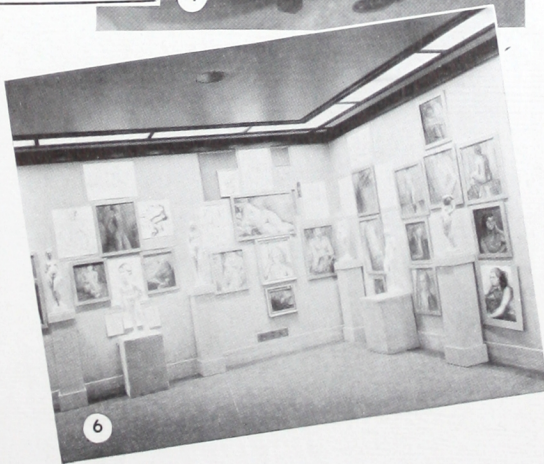
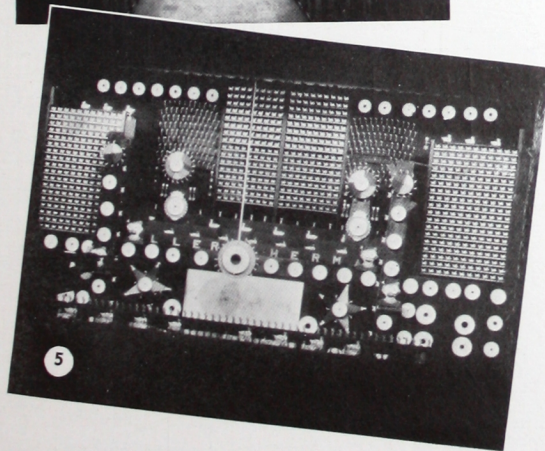
1. Orchestra Lighting with 33-A or 88, using "Control-Ring."
- 2 and 3. Art Galleries. Directional lighting. Nos. 338 or 44 above hinged-rims (pages 75-78).
4. Memorial Windows are more beautiful at night when lighted.
5. Operating Rooms. 15 No. 33-A above skylight, or above recessed hinged rims (on 12 to 14 ft. ceiling) produce approximately 500 foot-candles.
6. Cafeterias and Markets. Interior floodlighting "sells something more."
7. Interior floodlights mounted on top of bank vault provide correct light control for pleasing indirect lighting.





Interesting Uses for Interior Floodlights

1. Lighting Small Stage. Units on separate circuits, mounted behind beams or "drops," some fitted with "Control-Ring."
2. Orchestra and Ballroom Lighting. Units on chandeliers or mounted in other ways provide fascinating lighting.
3. Altar Lighting. The most important in the church.
4. Spot-light Sales concentrate attention on special values.
5. Shooting Galleries, Fairs, Carnivals. Interior floodlights are complete, economical and practical lighting units.
6. Art Galleries. Units mounted above hinged panels or individual hinged ceiling rims (pages 75-78).



Accessories for X-Ray Interior Floodlights

"Control-Ring"

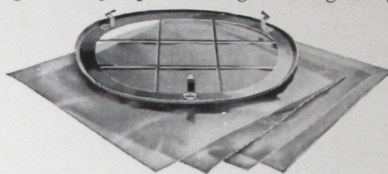
A louver for converting regular Interior Floodlights into "Commercial Spotlights"



X-RAY
reflectors

"Color-Ray"

Color equipment, consisting of a frame with colored gelatins for producing color lighting effect



"CONTROL-RING" is a circular spill shield for eliminating the "spill" of light common to all floodlights and confining all the light to one straight controlled beam (see page 46).

"Control-Ring" is used only with concentrating types and is available only for the 200 and 500-300 watt sizes listed below. Attached by snapping spring-clips over the lip of the floodlight reflector. Does not interfere with the use of "Color-Ray" and can be used with reflectors when recessed. This type of louver with "concentric-rings," is used only with X-Ray parabolic reflectors. For louvers to conceal the light source with window reflectors see page 32.

Scale details of No. 33-A and 88, the interior floodlights that use "Control-Ring" on page 81.

CAT. No.	FOR USE WITH	CODE WORD
13351	33-A, 33-B, 303-A, 303-B (Page 48)	BEAR
18860	88, 88-B, 808, 888-B (Page 49)	DEER

Control-Ring is not available for No. 44 "Pup" and is not used with distributing floodlights Nos. 338, 338-B, 888 and 888-B

STANDARD PACKAGE: One—Shipping weight 1 pound

Uses for Control Ring with No. 33-A and No. 808 Interior Floodlights include:

Show Window Lighting. Automobile Display Rooms. Stores, Shops, Conventions, Expositions: *Interior Displays, Spotlight Sales, Hotels, Restaurants: Spotlighting Bulletin Boards, Food Displays, Orchestras, Fountains, Dance Floors, Lodges: Spotlighting Ritualistic Altars, Officers' Stations, Church Altars.* In Brief: *Where Intense Lighting is Required with Lamps Concealed.*



Illustration at the left shows how "Control-Ring" fits inside of interior floodlights, confining all light to a concentrated spot beam. The flood of light shown with center spot beam units (page 46) has been eliminated. Where adjustment in the size of spot or rectangular beam is required, use No. 315 Spotlight (page 54).

"COLOR-RAY" is for X-Ray Interior Floodlights and Window Reflectors (page 32). It consists of a double metal frame with spring clips for fastening to the reflector and one sheet each of red, blue, green and amber gelatin. Gelatin colors are easily inserted, the frame is quickly attached and is held securely to the reflector. The use of "Control-Ring" or recessed equipment does not interfere with the use of "Color-Ray," as all the accessories for X-Ray Reflectors are designed for use singly or in combination with others.

CAT. No.	FOR USE WITH	CODE WORD
10370	338 and 338-B (page 50)	Peony
10470	88, 88-B, 808, 808-B, 888, 888-B (page 49-50)	Poppy
10556	33-A, 33-B, 303-A, 303-B (page 48)	Phlox

STANDARD PACKAGE: One—Shipping weight 1 pound

Color Gelatins

Sheets of color gelatin for use with "Color-Ray" are available in red, blue, green and amber in two sizes:

Size 11½" x 11½"

For No. 10556 and 10370 "Color-Ray" or No. 33-A, 303-A, 338 (pages 48 and 50).

CAT. No.	COLOR	CODE WORD
10372	Red	Rose
10373	Amber	Jonquil
10374	Green	Smilax
10375	Blue	Gentian

Size 15" x 15"

For No. 10470 "Color-Ray" or No. 88, 808, and 888 (pages 49 and 50).

CAT. No.	COLOR	CODE WORD
10472	Red	Magenta
10473	Amber	Daffodil
10474	Green	Myrtle
10475	Blue	Ageratum

STANDARD PACKAGE: 10 sheets weigh approximately one pound.

Three spring clips on the metal frame hold "Color-Ray" securely to the reflector regardless of the position in which the floodlight is mounted. "Color-Ray" and "Control-Ring" can be used at the same time in type No. 33-A and 88. For additional brief suggestions on "Color-Ray," see pages 30 and 32.



No. 33-A
No. 33-B



Each No. 315 Spotlight has four color frames (red, blue, green and amber), one metal and two glass slides for producing smaller sharp "Spot Beam," "Soft Spot," and rectangular "Vertical" or "Horizontal Beam" of light.

No. 315 SPOTLIGHT

250 Watt G-30 Lamp

(Standard Base Floodlighting or Spotlight Service)

For Spot lighting where adjustment in the size of spot is needed

SPECIFICATIONS

Black Enamel Finish. Wired with 6 ft. of No. 16 wire and separable plug. Slides provide color lighting and special effects shown below.

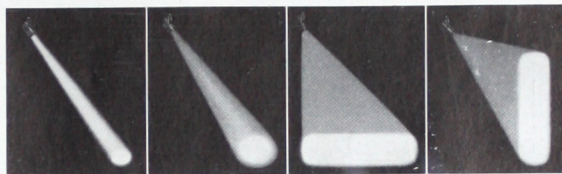
DIMENSIONS

Length Overall: 15 $\frac{5}{8}$ ". Yoke: 7 $\frac{5}{8}$ ". Diameter: Barrel 5 $\frac{3}{4}$ ". Lens 4 $\frac{1}{2}$ "

STANDARD PACKAGE

Standard Package containing one unit weighs 8 pounds.

Code Word: CONTROL SPOT



Spot Beam
6° to 24°

Soft Spot Beam
8° to 30°

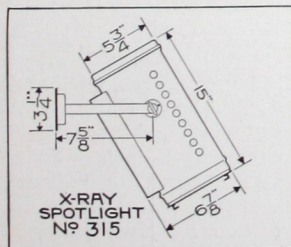
Both Horizontal Beam and Vertical Beam
adjustable from 6° by 30° up to 24° by 50°

A CONDENSING lens spotlight must be used to provide a sharply defined beam of light with the varied control shown above. The 6° to 24° "Spot Beam" at 10 feet gives a spot 12 to 48 inches. The metal plate with center opening reduces this to 4° (eight inches), adjustable to 11° (22 inches), and produces a sharply outlined spot. In the "Soft Spot Beam" 8° to 30° the edge of the spot fades away instead of being sharply defined (produced by a

special glass slide). At 10 feet, this is adjustable 16 to 60 inches. Rectangular "Horizontal or Vertical Beam" 6° by 30° (12 by 60 inches), adjustable to 24° by 50° (40 by 100 inches), is produced by the special prism glass slide. Best spot-lighting results are had where other illumination is of low intensity. For general commercial high-lighting or spot-lighting, No. 33-A or No. 88 units (Pages 45-52) may be used. Diameter of beam in these units is not adjustable.

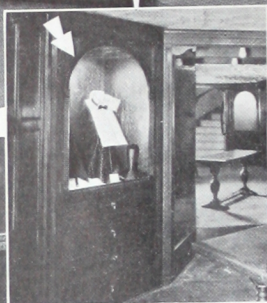
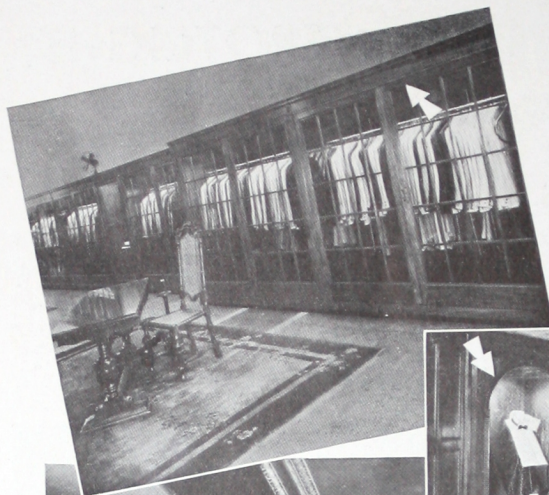
Uses for No. 315 Spotlight include:

Lodges: Altars, Officers' Stations. Theatres: Stages, Niches, Tableaus. Churches: Altars, Cross Stations, Statues, Baptismal Fonts. Stores, Display Rooms: Show Windows, Interior Displays, Spotlight Sales, Lighting Cards, Signs, etc. Conventions and Expositions. Hotels: Interior Displays, Bulletin Boards. Spotlight Stair Landings Difficult to Light by Other Means. Photographs of many interesting applications for high-lighting and spot-lighting are reproduced on pages 45 to 52.



Base may be mounted in 3 $\frac{1}{4}$ " holder. Has two 3 $\frac{1}{16}$ " holes 2 $\frac{13}{16}$ " o. c. for fastening to ceiling, side wall or floor. Socket and lamp slides forward and back to change spread of light. Wing nut locks socket in position. Two wing screws on yoke lock the spotlight to proper angle. Color and glass slides fit into grooves on front of spotlight.





Display Case Lighting

DISPLAY cases are miniature show windows placed where they will command attention, add interest, "dress-up" the interior, and "SELL!"

The photographs reproduced on these pages show many types of display cases, all of which are lighted with standard X-Ray Reflector equipment that is readily available. The upper left photograph shows how "LightStrip" (page 41) may be used for lighting stock and display racks in clothing stores, increasing their value as display cases and making easier the selection of pattern or style. The small photograph of a shirt display shows an interesting cabinet attractively lighted by just two No. 7 "Scoop, Jr." or No. 11 "Hood, Jr." reflectors (pages 27-28).

Corridors, passages, lobbies (*right above*), correspond in value to street frontage for window displays. Their effectiveness is increased by lighting with the smaller sizes of X-Ray window reflectors.

Display cases of silver and polished metals (*left center*) are attractively lighted with No. 11 "Hood, Jr." reflectors (page 28) and recessed. Clear or daylight lamps, or a combination of both, may be used.

An innovation in display case lighting (*bottom*) uses the idea of footlighting with X-Ray Portable Footlights (page 59) or "LightStrip" (page 41), or X-Ray Reflectors mounted below panels of diffusing glass. This arrangement permits having cases with lower head room and raises the platform to a more interesting and often more pleasing height.





X-RAY Reflectors offer a wide range of lighting effects for natural science exhibits.

(Left) Notice the effectiveness with which aquariums may be lighted with No. 848 (page 70), 88 or 33-A (pages 48-49). Upper photograph shows mounting of interior floodlights above tanks. Notice in the lower photograph, the control and concentration of light with X-Ray Reflectors.

(Upper Right) Direct lighting produces natural shadows of sunlight. The effect of daylight may be provided using window reflectors or interior floodlights. Where shadowless lighting is wanted, light is reflected on to a light colored ceiling for indirect quality of illumination.

(Right) For high specimen cases use No. 11 (page 28), No. 844 (page 26), or "LightStrip" (page 41).



(Below) The side walls of the store shown in this photograph are made up entirely of display cases. No. 11 "Hood, Jr." reflectors (page 28) light the upper section. This same type may be used for lighting the lower portions, although in general "Scoopettes" (page 57) or "LightStrip" (page 41) are recommended. Where wood shelves are used, "LightStrip" is mounted on the under side of each wood shelf for lighting the section immediately below it. This makes each shelf uniformly lighted.

(Below) The millinery department of the large department store shown in this photograph offers an interesting example of the use of interior floodlights for open display case lighting. Light is concentrated on the hats immediately under the unit. The general flood of light provides plenty of light to make the rest of the display stand out. For a standard small size equipment that will fit any size or shape of show or wall case use "Scoopettes" or "Hoodettes" shown on pages 57 and 58.

Only a few of the many interesting applications can be shown here.
Curtis Engineers will gladly assist in planning effective display case lighting.



S-200 "Scoopette"

For lighting show cases with inside height and depth approximately equal.



50 Watt (A-19 or P-19) Lamp
25 Watt (A-19) Lamp
15 Watt (A-17) Lamp

STANDARD FINISH:
BLACK NICKEL

"Scoopettes" and "Hoodettes" supplied in complete showcase lighting outfits or as separate reflector units (medium screw base sockets) for mounting on standard $\frac{3}{8}$ " brass pipe ($\frac{1}{8}$ " iron pipe size with standard thread).

H-199 "Hoodette"

For lighting wall cases with height approximately 2 to 3 times depth.



DIMENSIONS

Width 4". Depth from front to back $3\frac{3}{8}$ ". Height Overall $4\frac{1}{2}$ ".

Width $3\frac{3}{4}$ ". Depth from front to back $5\frac{3}{8}$ ". Height Overall $4\frac{1}{2}$ ".

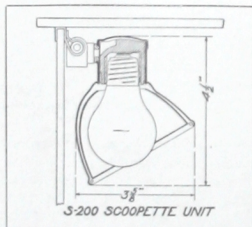
STANDARD PACKAGE

Standard package of 10 "Scoopette" units weighs 7 pounds.

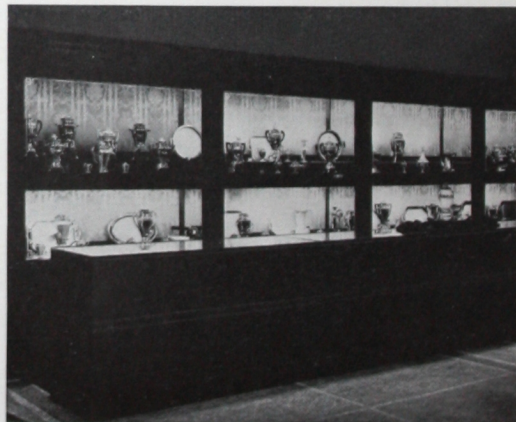
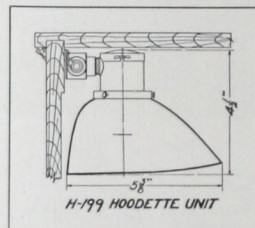
Standard package of 10 "Hoodette" units weighs 9 pounds.

Code Word:
SCOOPETTE

Code Word:
HOODETTE



"SCOOPETTES" and "HOODETTES" are miniature show window reflectors and are recommended for lighting display cases of the general types shown in the photographs below. Lamps burn in the natural position, base-up. Features: are X-Ray Reflector efficiency; better light-control; brighter and more uniform intensity of light without glare; lower maintenance cost. Complete outfits to fit wood frames or all glass cases, either square or curved ends.



Complete Display Case Lighting Outfits

"SCOOPETTE" and "Hoodette" outfits are supplied complete with all fittings necessary to install in either wood frame or all-glass display cases. They fit equally well in cases with curved or square ends. The "Scoopette" or "Hoodette" unit is installed on miniature conduit fittings using $\frac{3}{8}$ " brass tubing. In wood frame cases, a small bracket (S-136) that clips around the tubing, is attached with small wood screws to the inside of the wood frame of the case. In all glass cases a similar bracket (S-166) fits between the front and top glass and clips over the edge of the glass to hold the equipment secure.

In average stores, place units with 25-watt lamps on approximately 24-inch centers. "Scoopettes" and "Hoodettes" provide the flexibility of using up to 50 watts in the A-19 or P-19 bulb. All metal parts are finished in Black Nickel, which is neat, attractive and inconspicuous.

Miniature-Conduit Scoopette Fittings

Supplied with complete "Scoopette" and "Hoodette" outfits, or available for other use with $\frac{3}{8}$ " Brass Tubing (standard $\frac{1}{8}$ " iron pipe size).



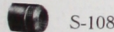
S-101



S-102



S-104



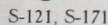
S-108



S-112



S-113



S-121, S-171



S-126



S-127



S-128

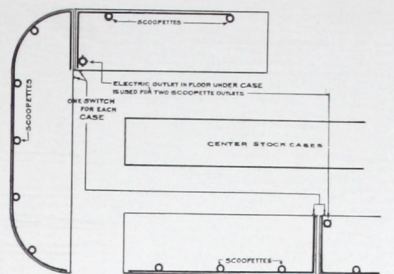


S-129

The standard fittings for a four-light "Scoopette" outfit are shown at the right (sufficient No. 18 special flexible stranded wire included). The principal fittings for use with $\frac{3}{8}$ " brass tubing are pictured in larger size at the left. These have many uses where space for mounting or concealing "wiring" is limited.

STANDARD PACKAGE of all Fittings is Ten

CAT. No.	DESCRIPTION
S-101	Body, "T" fitting with cover.
S-102	Elbow, with cover.
S-104	Back-Fitting, "L," with cover.
S-105	Cap, for end tube.
S-108	Coupling, threaded for $\frac{3}{8}$ " brass tubing.
S-109	Special switch box with plate.
S-111	36" flexible ($\frac{3}{16}$ ") conduit with fittings.
S-112	Switch-Box, no cover.
S-113	Switch-Plate, Black Enamel Finish.
S-114	Insulating joint, with nipple and locknuts.
S-115	Switch, for S-109 or S-112.
S-119	72" flexible ($\frac{3}{16}$ ") conduit with fittings.
S-120	Sleeve-Connector, for attaching $\frac{5}{16}$ " flexible conduit to S-102 or other fittings.
S-121	Squeeze-Connector, for attaching $\frac{3}{16}$ " flexible conduit to switch box or $\frac{1}{2}$ " socket.
S-126	Strap for supporting $\frac{3}{8}$ " brass tubing.
S-127	Strap for supporting $\frac{3}{16}$ " flexible conduit.
S-128	Plug, threaded to close end fitting.
S-129	Union-Coupling, threaded for $\frac{3}{8}$ " brass tubing.
S-136	Bracket, (wood frame) for $\frac{3}{8}$ " brass tubing.
S-166	Bracket, (glass case) for $\frac{3}{8}$ " brass tubing.
S-171	Squeeze-Connector, for attaching $\frac{3}{16}$ " flexible conduit to $\frac{3}{8}$ " X-Ray socket.

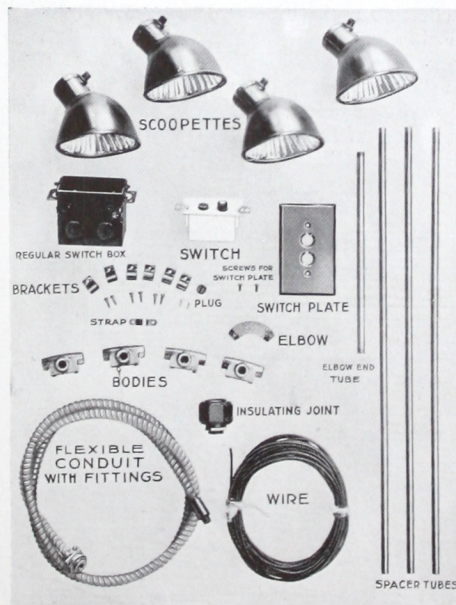


Economy of wiring is apparent from this diagram.

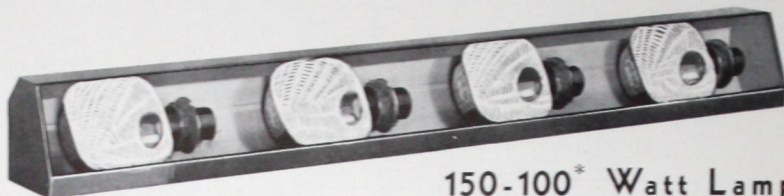
Planning Display Case Lighting

The intensity of lighting in display cases should be considerably higher than the general store illumination. Average spacing between units is 24" using 25-watt lamps. Scoopette and Hoodette flexibility makes it possible to increase or decrease intensities by using either 15 or 50-watt lamps. When ordering complete outfits, specify "all-glass" or "wood frame" and give the following dimensions:

- Inside length from glass to glass or wood frame to wood frame.
- Distance from under side of top glass to under side of floor of case.
- If cases are not of regular square end type, send a rough sketch giving dimensions and radius of the end curve.



Material needed for a four-light Scoopette outfit. (Regular Switch-box, Switch and Plate shown above, are supplied by Contractor)



Portable Footlights

150-100* Watt Lamps on 12" Centers

For Show Windows, Small Stages and Wherever a Standardized or Portable Footlight Is Needed.

STANDARD FINISH: Statuary Bronze (T) Lacquer Enamel.

STANDARD PACKAGE of Portable Footlights is ONE Section.

AVERAGE SHIPPING WEIGHT per foot on sections four feet long or more is 4½ lbs.

*NOTE: With 100-watt lamps use short (¾") socket extension



Footlights used alone or in combination with regular reflector equipment, light the display brightly from below, eliminating shadows so often objectionable in overhead lighting.

SPECIFICATIONS

Sturdily constructed of heavy gauge steel with inside finished Aluminum Bronze. X-Ray Reflectors on 12" centers. Height overall 5½". Depth from front to back 5½".

Provided in two standard lengths, 4 feet and 8 feet, but can be made to any length. Furnished unwired (without wire) and unassembled. Removable wireway cover makes wiring easy.

No. 10584—Section 4 feet long. Equipped with four X-Ray Reflectors for use with four 150-100* watt lamps. Code Word: JEAN

No. 10588—Section 8 feet long equipped with eight X-Ray Reflectors for use with eight 150-100* watt lamps. Code Word: BETTY

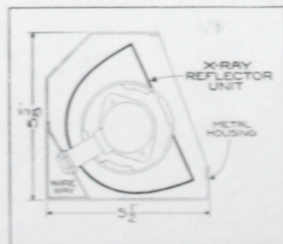
No. 10589—Use this catalog number when ordering portable footlight in lengths other than four or eight feet. Specify length required. X-Ray Reflectors for 150-100* watt lamps on 12" centers.

STANDARD Curtis portable footlights are made with a heavy metal housing to conceal the X-Ray Reflectors and wiring. Their purpose is to light a display or setting from below, providing more uniform general illumination or reducing sharp shadows. In show windows, such as the furniture store window reproduced below, they emphasize the quality and character of the merchandise. Here is another idea for using footlights: Completely change the lighting

by using *only* footlights. It "stops the shopper." This standard portable footlight is widely used for stages in small theatres, schools, lodge rooms, etc. Another type of Curtis footlight disappears into a trough in the floor of the stage and is raised into position through a hinged section of the floor. This type is installed in both show windows and in small stages. Very practical! Data and full size drawings of this equipment available on request.

Uses for Portable Footlights Include:

Show Windows: Used with regular lighting or alone (a change commands attention). Stages: Schools, Clubs, Lodges, Small Auditoriums. Interior Displays. Style Shows. Conventions and Expositions. Police Show-Up Rooms (page 34). Museums, Art Galleries, Natural Science Exhibits.

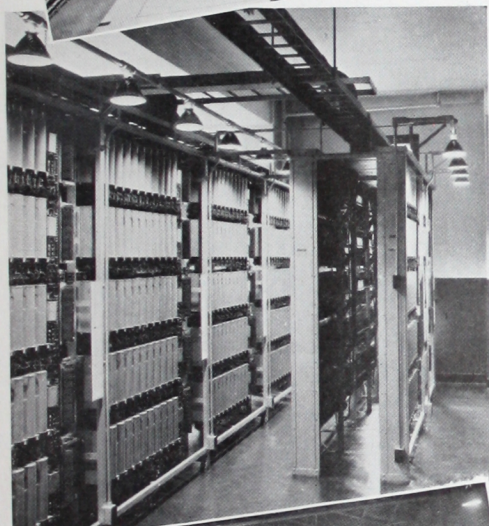
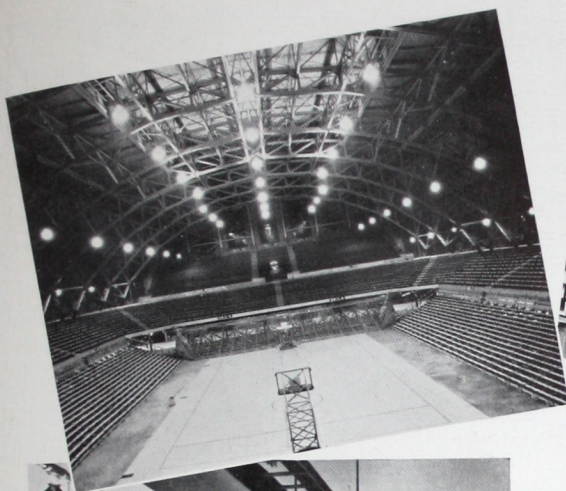


Drawing shows cross-section of footlights.

X-Ray Reflector turns on the holder, providing slight adjustment in direction of light.

Equipment is often recessed in show windows beneath window frame, providing a practical way of recessing this standard type of portable footlight.





General Lighting Reflectors

for
**Commercial, Educational, Industrial
and Sports Lighting**

THE two groups of General Lighting X-Ray Reflectors included in pages 60 to 73 inclusive, although often referred to as Industrial or Direct Lighting Reflectors, have many other applications. The smaller sizes with capacities from 60 to 200 watts are included in one group, while the other of 300 to 1500 watts capacity is referred to as high intensity or high bay units. Photographs illustrating standard applications of commercial, educational, industrial and sports lighting are included on pages 60 to 72 inclusive. The requirements of these groups are first, accurate light control; second, efficiency, and third, permanent reflecting surface. These are provided with X-Ray General Lighting Reflectors.

The light control in this group of reflectors is of two general types, semi-concentrating and distributing. Like all X-Ray Reflectors, these are processed with pure silver, giving them the most efficient reflecting surface. They are GOLDEN ARMORED to insure their maintaining this original reflecting surface, efficiency and maximum light output at all times. This guarantees minimum cost with most permanent and satisfactory lighting results.

Reflectors are sometimes equipped with wire guards as in armories or gymnasiums, and in many cases are recessed above the ceiling, using hinged ceiling rims. Applications together with catalog numbers will be found on pages 73 and 75 to 80 inclusive.

A simple method of calculating the wattage, spacing and area that can be lighted to a given intensity using X-Ray Semi-Concentrating Reflectors (greatest punch of light "down" as shown at left); or Distributing Reflectors (wide spread of light, averaging about 90° as shown at right).

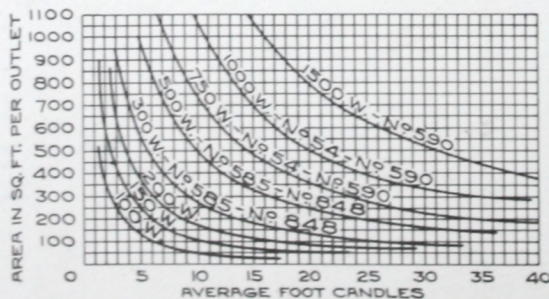
An Easy Way to Determine the Wattage and Area per Outlet

1. *Intensity of light required.* (See Illumination Standards Table at the right.)

2. *Spacing between units determines area lighted from each outlet.* With distributing reflectors, spacing should not exceed $1\frac{1}{2}$ times the mounting height. With semi-concentrating reflectors, spacing should not exceed $\frac{3}{4}$ of the mounting height.

3. *Wattage of each outlet:* At left of chart below locate figure that approximates *your area*. Follow this line across (right) to the junction of vertical line corresponding to "foot-candle" intensity you require. Curved line nearest this point indicates wattage required with catalog number of both distributing and concentrating reflector. This may be checked in more detail in Reflector Data Table on page 62.

Use large size lamps wherever possible, as the rated efficiency per watt increases with the size of the lamp.



NOTE: Where reflectors are mounted above glass (skylights, glass panels or recessed individually), wattage must be increased. See "Light Transmission Through Glass," page 62.

Interior	Foot-Candles	Interior	Foot-Candles
Armories.....	12	Factories—Industrial (continued)	
Art Galleries:		Woodworking:	
General.....	5	Rough Sawing.....	8
On Paintings.....	25-100	Sanding, Veneering.....	12
Auditoriums.....	5	Garages—Storage.....	3-8
Banks:		Repair and Service Dept..	15
Lobbies.....	10	Gymnasiums.....	12
Bowling Alleys.....	8	Handball, Squash and	
On Pins.....	25	Racquet Courts.....	25
Churches:		Indoor Tennis.....	25-50
Auditoriums.....	3-5	Swimming Pools.....	8
Sunday School Rooms.....	8	Hospitals:	
Pulpits or Rostrums.....	12	Operating Tables.....	100-200
Art Glass Windows.....	25-50	Indoor Sports:	
Dance Halls.....	6	Athletics, Swimming Pools	
Factories—Industrial		(See "Gymnasium")	
Assembling.....	8-20	Skating Rinks (Indoor)...	8
Cloth Products—Cutting,		Libraries—Stack Rooms....	6
Sewing.....	10-20	Museums:	
Foundries.....	8-15	General.....	8
Inspecting.....	10-25	Special Exhibits.....	25-100
Machine Shops.....	10-25	Printing and Engraving	
Packing, Boxing.....	6	(See "Industrial")	
Printing:		Schools:	
Engraving, Typesetting.....	50-100	Auditoriums.....	8
Binderies, Presses.....	12	Manual Training.....	12
Receiving, Shipping.....	6	Skating Rinks (Indoor).....	8
Steel and Iron Mills.....	6	Stores.....	12-18
Charging, Casting.....	4		
Rolling, Shearing.....	5		
Storage, Stock Rooms.....	3		
Textile Mills.....	6-20		

Methods of Installing

The methods of installing are governed by structural and architectural conditions, viz.:

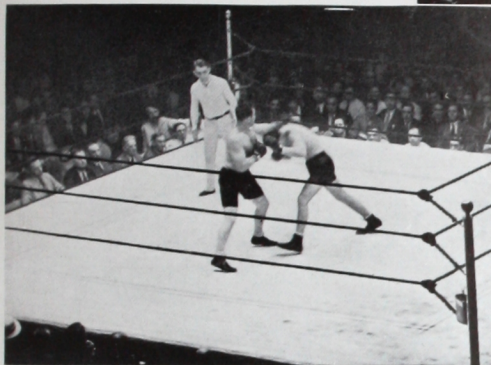
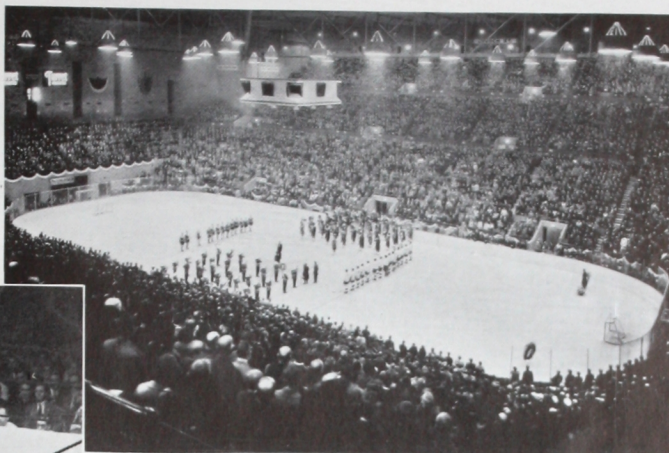
Suspended or Open Mounting: Where equipment is suspended between beams (on chain, pipe, drop cords), or where reflectors are mounted from outlet boxes in the ceiling, the method of installing is referred to as "open mounting."

Recessed Mounting: In this application, reflectors are installed above the ceiling using either individual finishing flanges or hinged ceiling rims with glass or wire guards, or both. Complete data on pages 73, 75-80.

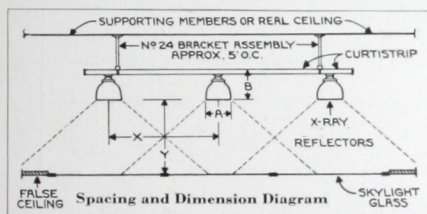
Skylight and Glass Panel Mounting: This covers those general applications where reflectors are mounted in groups instead of singly above large or small panels of glass. Spacing and minimum mounting height of reflectors that insures uniform distribution of light on the glass, may be determined from diagram and table on page 62.

This Toronto Auditorium (right) has an intensity of 32 foot-candles with 104 No. 590 "Big Boy" X-Ray Reflector Units. For boxing and wrestling, 8-1500-watt "Big Boys" on the frame containing loud speakers, are lowered to the proper height above the Boxing-ring.

Photograph below (exposure 1/75 of a second) shows boxing in Boston Coliseum. High intensity lighting is with 80 No. 910 Reflectors and No. 12910-N "Louvers" (pages 25 and 32), 20 on each of the four sides of a suspended fixture. Notice how "Louvers" confine all light to the ring.



Skylight and Glass Panel Mounting (Continued)



REFLECTOR DATA TABLE OF WATTAGE AND DIMENSIONS

Reflector Number	Wattage	DIMENSIONS	
		Reflector Diameter (A)	Minimum Overall Height of Reflector and Wiring Channel (B)

DISTRIBUTING X-RAY REFLECTORS

Spacing "X", must never be greater than $1\frac{1}{2}$ times height "Y"

Reflector Number	Wattage	Reflector Diameter (A)	Minimum Overall Height of Reflector and Wiring Channel (B)
3	60-75	$4\frac{1}{2}$ "	$6\frac{1}{2}$ "
535	100	$5\frac{7}{8}$ "	$8\frac{1}{8}$ "
570	150	8"	$10\frac{1}{8}$ "
575	200	$9\frac{3}{8}$ "	$11\frac{1}{8}$ "
585	500-300	$11\frac{7}{8}$ "	$15\frac{1}{4}$ "
54	1500-750	$16\frac{1}{2}$ "	28"

SEMI-CONCENTRATING X-RAY REFLECTORS

Spacing "X" must never be greater than $\frac{3}{4}$ of height "Y".

Reflector Number	Wattage	Reflector Diameter (A)	Minimum Overall Height of Reflector and Wiring Channel (B)
696	100-60	$8\frac{3}{8}$ "	$8\frac{1}{4}$ "
700	150	10"	$8\frac{1}{4}$ "
710	200	$11\frac{1}{2}$ "	$10\frac{1}{4}$ "
848	500-300	$13\frac{3}{4}$ "	$13\frac{3}{4}$ "
590	1500-750	20"	26"

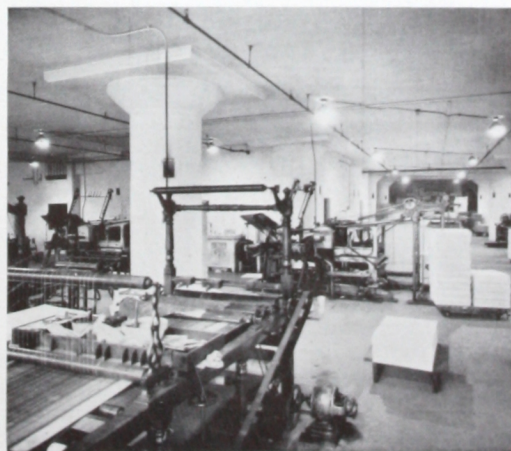
Light Transmission Through Glass

Glass generally used in skylight, panel or recessed-lighting is listed in the table below. The "factor" provides a simple figure for increasing the wattage normally used on "open mounting," to allow for absorption and depreciation.

Type of Glass	Light Transmission	*Factor
Pebbled	85-90%	1.9
Crackled	85-90%	1.9
Sanded	75-85%	2.1
Flashed Opal	55-65%	2.8

*Factor includes absorption of glass and allows for depreciation in skylight installations.

Example: 8 foot-candles desired in School Auditorium 60' x 90'. Three skylights 15' x 45', pebbled glass. Mounting height 5'. Spacing between outlets ($1\frac{1}{2}$ x 5') $7\frac{1}{2}$ allows 12 outlets over each skylight. (Two in 15'. Six in 45'). Total 36 outlets. Each outlet ($60 \times 90 \div 36$) lights 150 square feet and requires 150 watts on open mounting (from chart on page 61). Multiplying by Factor 1.9 (for clear pebbled glass) indicates 285 watts required. Use nearest size lamp ("Reflector Data" Table), i.e. 300-watt No. 585.



No. 3 "Mill" Reflector

Distributing Type

(Suggestions for Planning—Pages 61-62)



Lamps

75-60-watt
40-25-watt

Holders Required

Form "H" 2 1/4"
Form "O" 2 1/4"

(Holders and Sockets—Page 74)

DIMENSIONS

Diameter of reflector 4 1/2".
Height of reflector only 3 5/16".

STANDARD PACKAGE

Standard package of 20 reflectors only,
weighs 12 pounds.

Code Word: MILL

No. 535 Beehive Reflector

Distributing Type

(Suggestions for Planning—Pages 61-62)



Lamps

100-watt
75-60-watt

Holders Required

Form "H" 2 1/4"
Form "O" 2 1/4"

(Holders and Sockets—Page 74)

DIMENSIONS

Diameter of reflector 5 7/8".
Height of reflector only 5".

STANDARD PACKAGE

Standard package of 24 reflectors only,
weighs 22 pounds.

Code Word: HICKORY

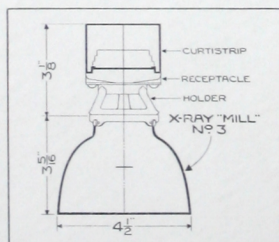


THAT part of the line of X-Ray general lighting reflectors that produces a wide spread of light is often referred to as "Beehives" because of the similarity to this shape. The reflectors are of the deep bowl type providing a wide spread or distribution of light at the same time concealing the lamp from view. The four smaller sizes are of 60, 100, 150 and 200 watts capacity. These are used for average mounting over work benches, table counters or for

general illumination. They are suspended on outlet boxes, drop cords, or CurtiStrip, and because of their small size are often recessed above the ceiling. Where they are mounted above glass panels or skylights, CurtiStrip provides an economical equipment easy to install. Where they are recessed, individual Finishing Flanges or Hinged Ceiling Rims are used. Photographs of recessed lighting installations with complete details on pages 73 and 75-80.

Uses for No. 3 include:

Stock Rooms: Local Lighting over Work Benches. Recessed above Hinged Ceiling Rims for Lighting when ceilings are low.

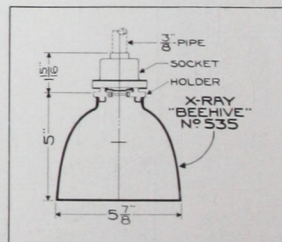


Drawing shows No. 3 mounted on No. 5-A CurtiStrip Socket (pages 36-40) with No. 10127 Form "H" 2 1/4" Holder for 60-watt lamp (page 74). Form "O" 2 1/4" Holder for CurtiStrip or other X-Ray Sockets is No. 12100. (Height from top of CurtiStrip to top of reflector 2 1/2") Scale Details on CurtiStrip, X-Ray Holders and Sockets, pages 81-82.

Uses for No. 535 include:

Counter Lighting in Markets, Work Rooms: General Lighting, Work Benches. Recessing where space is limited.

Drawing shows No. 535 mounted with No. 12100 Holder, No. 8053-B Socket (page 74) on 3/8" pipe. (Socket for 1/2" pipe is No. 8257-B.) With 2 1/4" Form "H" Holder No. 10127 and 100 watt lamp, height from top of socket to top reflector is 2 1/4". For recessing use Flange or Hinged Ceiling Rim (pages 73 and 75-80). Scale Details on Fittings pages 81-82.



No. 570 Beehive Reflector

Distributing Type



(Suggestions for Planning—Pages 61-62)
(Holders and Sockets—Page 74)

X-RAY
Reflector

Lamp
150-watt

Holder Required
Form "A" 3 1/4"



DIMENSIONS
Diameter of reflector 8".
Height of reflector only 7".

STANDARD PACKAGE
Standard package of 16 reflectors
only, weighs 33 pounds.

Code Word: OAK

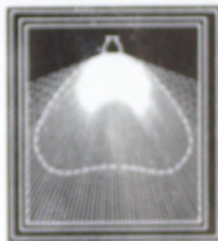
No. 575 Beehive Reflector

Distributing Type



Lamp
200-watt

Holder Required
Form "A" 3 1/4"



DIMENSIONS
Diameter of reflector 9 3/4".
Height of reflector only 8".

STANDARD PACKAGE
Standard package of 8 reflectors
only, weighs 24 pounds.

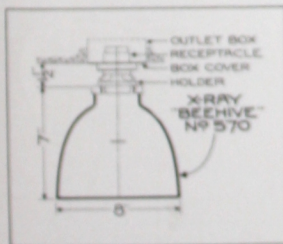
Code Word: ASH

LIGHT costs less with X-Ray Reflectors! The group of general lighting reflectors are of the same standard "X-Ray Quality" as the famous show window reflectors. They are made of the clearest quality of crystal glass processed with a pure silver reflecting surface and then Golden Armored to insure long life. This process protects the silver against chemical reaction, discoloration, or amalgamation. That is why X-Ray Reflectors maintain their original

reflecting surface, efficiency and maximum light output at all times. You get all the light you pay for! An extra heavy coating of silver, and the exclusive Golden Armor process of protecting the silver, guarantees the most permanent and satisfactory lighting results. The fittings and accessories designed for use with X-Ray general lighting reflectors incorporate features that make it possible to produce unusual lighting with standard equipment.

Uses for No. 570 include:

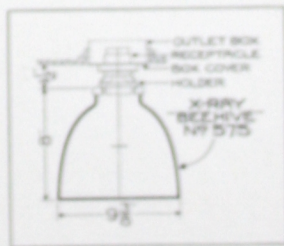
Factories, Gymnasiums, Handball Courts, Swimming Pools, Recess where suspended units are not desirable.



Drawing shows outlet box mounting with No. 570, No. 10300 Holder and No. 10146-B unit (page 74). Recess with Finishing Flanges (page 73), or Ceiling Rims (pages 77-80), Wire Guards (page 73). Scale Details for Curtis-Strip, X-Ray Holders, Sockets and Hinged Ceiling Rims, pages 81-82.

Uses for No. 575 include:

Industrial Lighting, Gymnasiums, Handball Courts, Indoor Swimming Pools, Skylight Lighting, Market Lighting.



Drawing shows No. 575 mounted on No. 10146-B outlet box receptacle unit with No. 10300 Form "A" 3 1/4" Holder (page 74). Wire Guards (page 73). Mount above Skylights with Curtis-Strip (pages 31-40). For Recessing above individual flanges or hinged rims, see pages 75-80. Details on Fittings, page 74.

No. 844 "Comet" Reflector

Very Concentrating Type



(Suggestions for Planning—Pages 61-62)
(Holders and Sockets—Page 74)



Lamp

*150 or 100 Watt

*(used only with X-Ray or CurtiStrip sockets).

Holder Required

Form "A" 3 1/4"

*No. 10300 Holder and
10012 Holder Extension.



DIMENSIONS

Diameter of reflector 8 5/8".
Height of reflector only 4 3/8".

STANDARD PACKAGE

Standard package of 12 reflectors
only, weighs 19 pounds.

Code Word: COMET

No. 696 Reflector

Semi-Concentrating Type



Lamps

100 Watt

75 Watt

60 Watt

Holders Required

Form "H" 2 1/4"

Form "O" 2 1/4"

Form "O" 2 1/4"

DIMENSIONS

Diameter of Reflector 8 3/8".
Height of Reflector Only, 5".

STANDARD PACKAGE

Standard package of 24 reflectors
only, weighs 30 pounds.

Code Word: RADISH

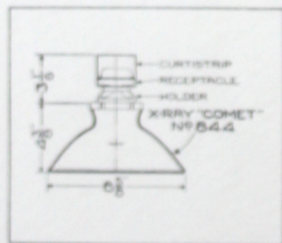


THERE are four shapes of semi-concentrating types of X-Ray general lighting reflectors. Their application includes local lighting for work benches, assembling tables, counters, etc., along with many specialized uses. The light-control with each reflector is different, giving this group considerable flexibility. These reflectors are installed on drop cords, on outlet-box socket units, or on CurtiStrip. When used for counter lighting, CurtiStrip

is the favorite method of mounting and wiring. This provides an economical fixture-unit that has straight alignment without effort. The wiring is accomplished in less time. Plug-in receptacles (convenience outlets) can be easily added at practically no expense either at the time the original installation is made, or after the installation is completed. This is a feature found only in CurtiStrip. For complete details on CurtiStrip see pages 36 to 40.

Uses for No. 844 include:

Museums, Art Galleries, Shallow Show Windows, Display Cases, also recessed for lighting entrances and building fronts.

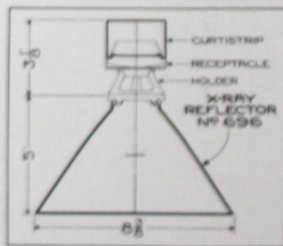


Drawing shows No. 844 mounted on No. 5-A CurtiStrip Socket (pages 36-40) with No. 10300 Form "A" 3 1/4" holder (page 74). To mount on 1/2" pipe use No. 8257-B Socket (page 74). With 150 watt lamp, height from top of reflector to top of CurtiStrip is 3 5/8". Recess with Finishing Flanges (page 73). Complete recessing units on pages 75 to 80.

Uses for No. 696 include:

Telephone Switching Racks, Bench and Counter Lighting, Mounting above Skylights, Lighting Safety Deposit Vaults.

Drawing shows No. 696 mounted on No. 5-A CurtiStrip socket (pages 36-40) and No. 10127 Form "H" 2 1/4" holder (page 74) for 100-watt lamp. Use Form "O" 2 1/4" No. 12100 holder with CurtiStrip or X-Ray socket with 75 or 60-watt lamp. Top of reflector to top of CurtiStrip is then 2 3/8". Scale Details of CurtiStrip, X-Ray Holders and Sockets, pages 81-82.



No. 700 Reflector

Semi-Concentrating Type



Lamp
150 Watt

Holder Required
Form "H" 2 1/4"

(Suggestions for Planning—Pages 61-62)
(Sockets and Holders—Page 74)

X-RAY
Reflectors



DIMENSIONS

Diameter of Reflector 10".
Height of Reflector only 5 1/8".

STANDARD PACKAGE

Standard package of 18 reflectors
only, weighs 32 pounds.

Code Word: CARROT

No. 710 "Crown" Reflector

Concentrating Type



Lamp
200-watt

Holder Required
Form "A" 3 1/4"

DIMENSIONS

Diameter of reflector 11 1/2".
Height of reflector only 6 7/8".

STANDARD PACKAGE

Standard package of 6 reflectors
only, weighs 19 pounds.

Code Word: CROWN

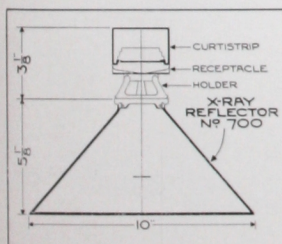


BOTH distributing and semi-concentrating X-Ray Reflectors are used for artificial skylight lighting. The selection of the proper reflector depends on the lighting required in the room below. Where general illumination is needed without concentration at or near the floor level, distributing reflectors will probably be used. If concentration is needed, the semi-concentrating reflectors, particularly the No. 710, are recommended. Where directional lighting

with extreme concentration is required, as in art galleries, the concentrating No. 844 Reflector or interior floodlights are generally used. Center to center spacing between distributing reflectors should not exceed 1 1/2 times the distance from the skylight to the bottom of the reflector. In the semi-concentrating reflectors, this spacing should not exceed 3/4 of the mounting height. For catalog numbers of complete recessing units see pages 73 and 77 to 80.

Uses for No. 700 include:

Counters, Cafeterias, Markets, Print Shops, Factories, Stock Rooms, Libraries, Recessed Lighting for Safety Deposit Vaults.



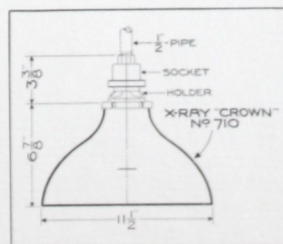
Drawing shows No. 700 mounted on No. 5-A CurtiStrip Socket (pages 36-40) with No. 10127 Form "H" 2 1/4" holder (page 74). Use standard methods of support with regular CurtiStrip fittings listed on page 39. Scale Details of CurtiStrip, X-Ray Holders and Sockets, pages 81-82. No. 700 may be recessed above flange or hinged rim (pages 78 and 80.)

Uses for No. 710 include:

Laboratories, Industrial Plants, Skylight Lighting—where intensive lighting is required over small area.

Drawing shows No. 710 with No. 10300 Holder and No. 8257-B Socket (page 74) mounted on 1/2" pipe.

For Recessing use Finishing Flanges (page 73) or Ceiling Rim Units (pages 77-80). These may be fitted with glass and wire guard. Scale Details of CurtiStrip, X-Ray Holders, Sockets and Ceiling Units, pages 81-82.





Direct Lighting with X-Ray Reflectors ↑

(Above) Markets and "food marts" offer exceptional opportunity for a departure from the conventional method of store lighting. By using X-Ray deep bowl Beehive reflectors, such as No. 585 (Page 69), this market has the lighting concentrated on the merchandise, and the entire store is uniformly lighted to a high intensity. This method of illumination can earnestly be recommended for its economy, efficiency and merchandising practicability.

For suggestions on planning Direct Lighting, see pages 61-62.



↑ Gymnasium Lighting

(Above) This actual unretouched photograph of gymnasium laid out for basket ball games, is a splendid example of high intensity sports-lighting that makes the game fast.



← Skylight Lighting

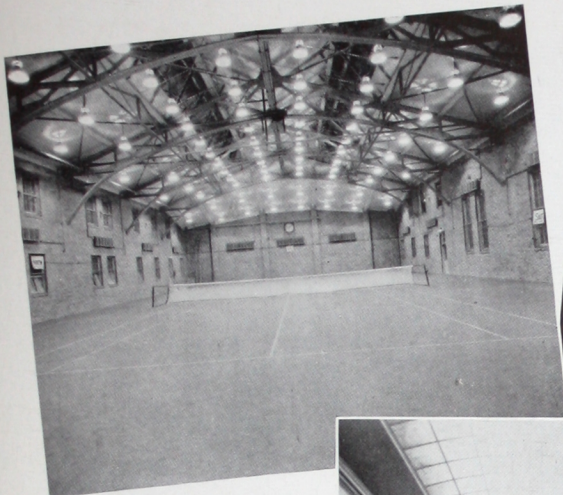
Whether skylights are curved, as shown in the public building at the left, or large as in the high school auditorium, or moderne, as shown below, X-Ray Reflectors will provide uniform effective lighting. Small insert shows view above typical skylight with reflectors installed on CurtiStrip wire channel. Its construction, large wire-way and ease of assembly save time and money! ↓



School Auditorium



Moderne Skylight Lighting



Indoor Athletic Courts ↑

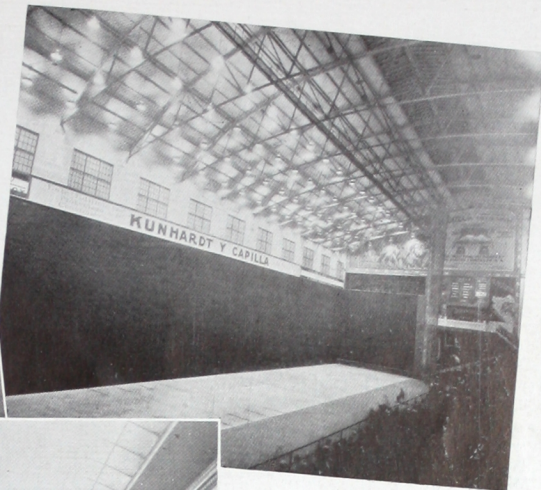
X-Ray No. 848 and 590 Reflectors (pages 70-72) provide the concentrated high intensity lighting without glare, needed for gymnasiums and indoor athletic courts. Another method of lighting tennis courts uses standard X-Ray Window Reflectors with Louvers to conceal light source—see page 35. ↓

Museum - Art Gallery Lighting →

X-Ray distributing or semi-concentrating Reflectors are used for general illumination. For directional lighting with maximum concentration on side walls, most effective lighting is with X-Ray Interior Floodlights (pages 45-53).



Museum and Art Gallery



Jai-Alai ↑

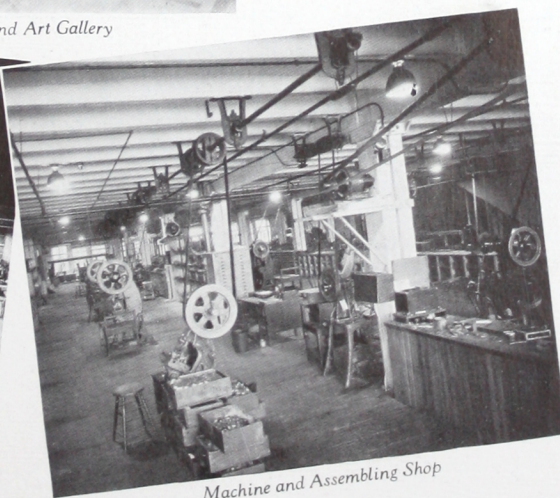
Photograph above shows a "Fronton" with the standard lighting preferred by famous Jai-Alai players. No. 590 "Big Boy" reflectors (page 72) with 1500-watt lamps on 10-foot centers provide 50-foot candles. The accurate light-control and uniform high intensity of illumination without glare, from No. 590, is ideal for this fast Spanish game.

Industrial Lighting

Photographs below show uniform lighting in factories with X-Ray Reflectors that lowers production costs, insures uniform quality, reduces spoilage and assures better control and flow of production.



Spinning Machines



Machine and Assembling Shop



No. 585 "Beehive" 500 or 300 Watt Lamp

Distributing Type

(Suggestions for Planning—Pages 61-62)

Holder and Socket are included.

(Mogul Socket is tapped for $\frac{1}{2}$ " pipe. $\frac{1}{2}$ " to $\frac{3}{8}$ " reducer included.)

DIMENSIONS

Diameter of Reflector $11\frac{7}{8}$ ".

Height including Reflector, Holder, and Socket $13\frac{1}{2}$ ".

STANDARD PACKAGE

Standard package of 4 reflectors, with holders and sockets, weighs 24 pounds.

Code Word: SPRUCE

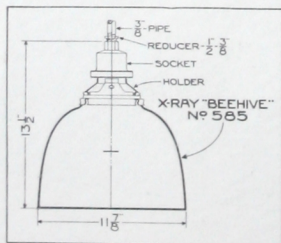
X-ray
reflectors

THE larger sizes of X-Ray direct lighting reflectors are sometimes referred to as the high intensity and high bay mounting units. Four sizes have a capacity from 500 (or 300) to 1500 watts. Each of these units come complete with holders and sockets, as shown in the illustrations. Sockets are tapped for one-half inch conduit. No. 585 and No. 848 are provided with reducer so that $\frac{3}{8}$ inch pipe can also be used. No. 585 and No. 848 reflectors may be

installed on pipe hanger or may be supported from outlet box cover by means of chased bushing. These larger sizes of X-Ray Reflectors are often used above skylights, especially where high intensity lighting is required. Installing reflectors above skylights on CurtiStrip (pages 36-40) makes it possible to bring the feed wires up to the fewest number of distribution panels, making considerable saving in the cost of wiring as well as material, panel boards, etc.

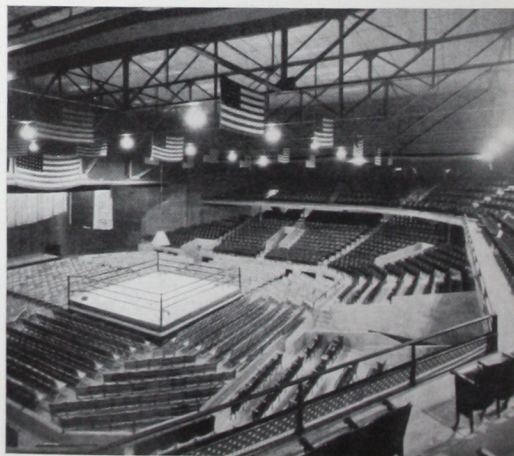
Uses for No. 585 in addition to applications shown on pages 60 to 62 and 67 and 68 include:

Recessed Lighting or where Ceiling Height is Low: When No Suspended Fixtures are Desired. Gymnasiums, Swimming Pools, Auditoriums, Churches, Recreational Buildings, Indoor Athletic Courts, Hockey Rinks. Skylight Lighting: Banks, Auditoriums, Art Galleries, Theatres, Public Buildings, Churches. Open Mounting: Factory and Industrial Lighting, Armories, Gymnasiums, Arenas.



Where No. 585 is recessed above the ceiling as in gymnasiums, use Finishing Flanges (page 73) Hinged or Plain Ceiling Rims (pages 75-80).

When reflectors suspended from ceiling require a guard to protect the lamp and reflector equipment, specify complete unit catalog number (page 73).



No. 842
concentrating X-Ray
Reflector shown with
No. 88 on page 49
uses same holder and
socket as No. 848 and
has same dimensions.



No. 848 "Little Boy" 500 or 300 Watt Lamp

Semi-Concentrating Type

(Suggestions for Planning—Pages 61-62)

Holder and Socket are included.

(Mogul Socket is tapped for $\frac{1}{2}$ " pipe. $\frac{1}{2}$ " to $\frac{3}{8}$ " reducer included with each unit.)

DIMENSIONS

Diameter of Reflector $13\frac{1}{4}$ ".

Height including the Holder and Socket is 12".

STANDARD PACKAGE

Standard package of 6 reflectors, holders and sockets weighs 33 pounds.

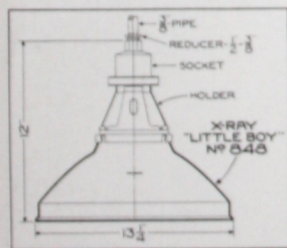
Code Word: LITTLE BOY

FOR large interiors, such as armories, field houses, gymnasiums and industrial plants, lighting equipment must be located at a comparatively great height so as to be out of the normal field of vision. Industrial plants with traveling cranes have reflectors mounted above the crane. Units must be spaced to provide an evenly distributed illumination over the entire floor area. Reflectors that are not recessed are generally located between steel beam trusses, as

they may then be mounted at a greater height. Wire guards are available where these are necessary (page 73). It is always advisable to use as large a lamp as possible, as the rated efficiency per watt increases with the size of the lamp. For No. 585 and No. 54 Beehive reflectors, spacing between units should not exceed $1\frac{1}{2}$ times the mounting height. For semi-concentrating reflectors No. 848 and 590, spacing between units should not exceed $\frac{3}{4}$ mounting height.

Uses for No. 848 "Little Boy" in addition to applications shown on pages 60 to 62 and 67 and 68 include:

Lighting Churches, Auditoriums, Public Buildings, etc.: By Individually Recessed Units or Combinations arranged in Rosettes. Skylight Lighting: Theatres, Banks, Museums. High Intensity Lighting: For Shallow Show Windows with Reflectors Recessed Individually or Above Glass Panels. Lighting Factories, Railroad Stations, Recreational Buildings, Dance Halls.



For recessing use Finishing Flanges (page 73) or Ceiling Rims (pages 75-80).

When reflectors suspended from ceiling require a guard to protect the lamp and reflector equipment, specify catalog unit number (page 73).

For Color Lighting use No. 10470 (page 53).





No. 54 "Jumbo"

1500-1000-750- Watt Lamp

Distributing Type

(Suggestions for Planning—Pages 61-62)

Special Holder and Mogul Socket are included.

DIMENSIONS

Diameter of Reflector only, $16\frac{1}{2}$ ", including Holder, 17".
Height including the Holder and Socket is $21\frac{3}{4}$ ".

STANDARD PACKAGE

Standard package of 2 reflectors, holders and sockets weigh 50 pounds.

Code Word: JUMBO

X-Ray
reflectors

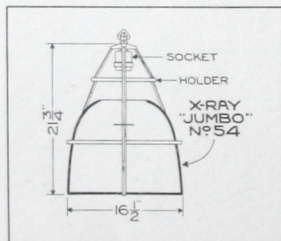
THE paramount production problem today is: (1) Lower production costs, (2) Delivery on schedule, requiring better production flow through the plant, and maintaining production schedules, (3) Uniform quality of manufactured product through decreased spoilage and production control.

Better factory lighting is an important key in the solution of these production problems. Higher intensities increase efficiency by making it easier to see.

This reduces errors and spoilage to a minimum, and better work is done in less time. This decreases production costs, assures a more uniform standard of quality in the product manufactured and enables each department to maintain its part in the production schedule. No. 54 "Jumbo" and No. 590 "Big Boy" X-Ray Reflectors are the outstanding types of lighting equipment for high interiors. They assure proper lighting over the entire working plane.

Uses for No. 54 "Jumbo" in addition to applications shown on pages 60 to 62 and 67 and 68 include:

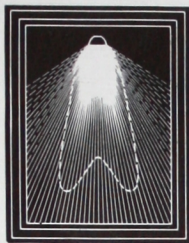
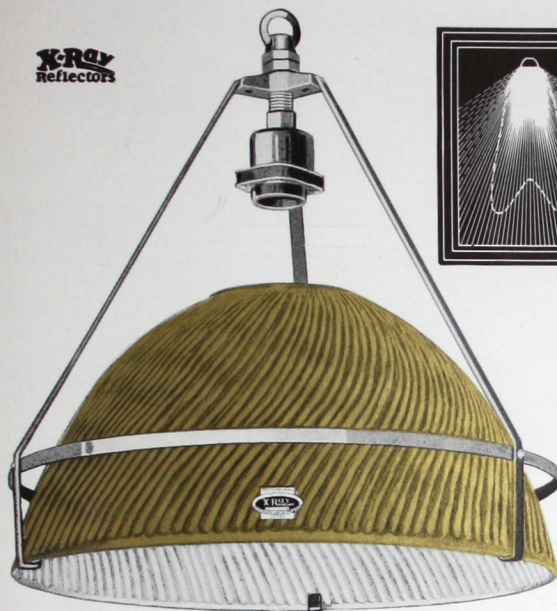
In Industrial Plants with Traveling Cranes: *Reflectors Mounted above Cranes.* In Gymnasiums, Armories, Drill Halls, Sports and Skating Rinks: *Reflectors hung between Trusses or mounted above Skylight or Recessed.* Churches, Waiting Rooms of Large Railroad Stations, Arenas, Convention Halls, Large Public Markets, "Jai-Alai" Frontons.



Reflectors of this size when recessed generally have ample space to permit maintenance from above. Catalog numbers for complete units on page 80.

When reflectors suspended from ceiling require a guard to protect the lamp and reflector equipment, specify complete unit number (page 73).



X-RAY
 Reflectors


No. 590 "Big Boy"

1500-1000-750- Watt Lamp

Semi-Concentrating Type

(Suggestions for Planning—Pages 61-62)

Special Holder and Mogul Socket is included.

DIMENSIONS

Diameter of Reflector only, 20"; including the holder, 20½".
Height including the Holder and Socket is 20".

STANDARD PACKAGE

Standard package, 2 reflectors, holders and sockets, weighs 42 pounds.

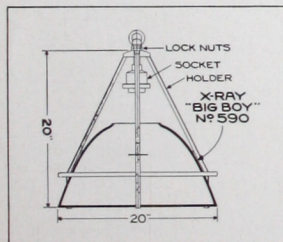
Code Word: BIG BOY

THE value of a reflector depends primarily on three things: First, its ability to accurately control the light rays from the lamp. Second, the efficiency or factor for reflecting light. Third, durability and service. The silver mirrored reflecting surface of X-Ray Reflectors has the highest rated efficiency—93% (see page 7). The scientific design and high reflecting efficiency of X-Ray Reflectors insure correct light control with maximum light output.

The extra heavy coating of silver and the exclusive Golden Armor process insures a uniform reflecting surface throughout their life. The No. 590 "Big Boy" uses at maximum the 1500 watt standard lamp producing 21.4 lumens per watt. The increased lumen output of the larger lamps together with the high efficiency of this powerful X-Ray Reflector make No. 590 the logical reflector for lighting high interiors or wherever a high intensity lighting is required.

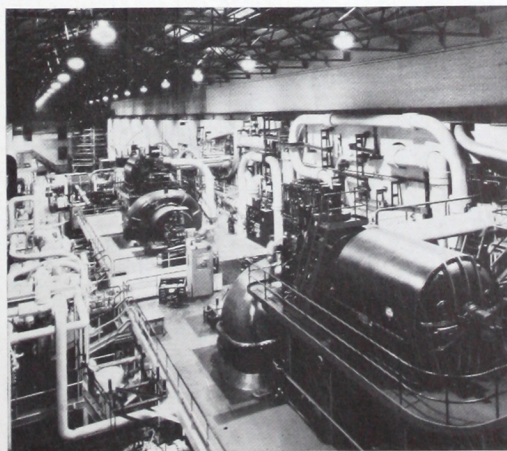
Uses for No. 590 "Big Boy" in addition to applications shown on pages 60 to 62 and 67 to 68 include:

Power Plant and Generating Rooms. High Interiors and Factories: *Where High Intensity Lighting is Required in Spite of High Mounting.* Also Used for Cathedral (High Interior Type of Church), Gymnasiums, Armories, Sports Arenas, Auditoriums: *Suspended in Conventional Way or Recessed Individually, or Above Skylight.*



Reflectors of this size when recessed generally have ample space to permit maintenance from above ceiling. Catalog numbers for Finishing Flanges only on page 73. Catalog numbers for complete units on page 80.

Where a guard to protect the lamp and reflector is needed, use catalog number for complete unit (page 73)



Complete X-Ray General Lighting Reflector Units

and Wire Guards

Wire guards are also listed under separate numbers for use with X-Ray Reflectors already installed or with other direct lighting units where equipment is exposed.

Guards are made of heavy gauge iron wire, welded into a substantial frame and heavily tinned. (No. 10590 guard on No. 14779 and 14780 units is painted green.) The bottom of guards is hinged to make installation, relamping and cleaning easy.

STANDARD PACKAGE of complete unit (including Guard with reflector, holder and socket) of Guard only is One.



WHERE lighting equipment is supported below the ceiling, as in gymnasiums, armories and in many shops, it is customary to use wire guards to protect the lamp and lighting equipment.

For convenience in specifying or ordering, fixtures are listed under a unit catalog number and include the complete equipment, viz: reflector with socket, holder and wire guard. Table below gives complete unit number, dimensions and lists parts included.

Catalog Number for Guard Complete with Reflector Unit
Where Guard Only Without Reflector Is Required, Use Number In This Column

COMPLETE UNIT NO.	Lamp Size	Diam. In.	Depth In.	Material Included in Unit Number			
				Wire Guard	X-Ray Refl.	Socket	Holder
DISTRIBUTING TYPE							
14775	150	12"	12"	14506A	570	10146B	10300
14776A	200	13½"	13½"	14507	575	10146B	10300
14777A	300-500	15½"	16"	14508A	585	As Reg. Incl. (See page 69)	
14777B	300-500	15½"	22"	14508B	585	As Reg. Incl. (See page 69)	
14779	750-1500	24"	26½"	10590	54	As Reg. Incl. (See page 71)	
SEMI-CONCENTRATING TYPE							
14778A	300-500	15½"	16"	14508A	848	As Reg. Incl. (See page 70)	
14778B	300-500	15½"	22"	14508B	848	As Reg. Incl. (See page 70)	
14780	750-1500	24"	26½"	10590	590	As Reg. Incl. (See page 72)	

*NOTE—Unless slow burning wire is used in conduit and outlet box, this long guard should be used with 300-500 watt and larger reflector units suspended on 6-inch nipple. Nipple or outlet box cover not included.

Provision for fastening guards to ceiling at four points is provided on the top of each guard. The method of fastening depends on the construction of the ceiling. Lag screws are generally preferred while toggle bolts will be used on plaster ceilings.

and Finishing Flanges

For use on low ceiling heights or where architectural arrangement, work or sports to be carried on, make it desirable to recess lighting equipment.

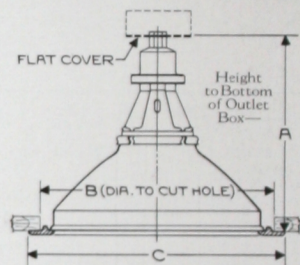
Flanges also listed separately for use with reflector equipment on hand.

Flanges made of light weight cast iron supplied unfinished, are generally painted to match ceiling.

STANDARD PACKAGE of complete unit (Flange with reflector, holder and socket) is One; of Flange only is Ten.



RECESSED lighting X-Ray Reflectors offers an inexpensive way of providing practical and unusual lighting in either large or average size interiors. Recess singly, or in groups according to the architectural treatment.



This Table Gives One Catalog Number for Finishing Flange Complete with Reflector Unit

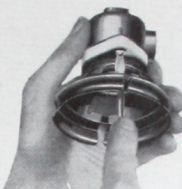
Where Flange Only Without Reflector Unit Is Required Use Number In This Column

COMPLETE UNIT No.	Lamp Size	Dimensions			Material Included in Unit Number			
		"A"	"B"	"C"	Flange	X-Ray Refl.	Socket	Holder
DISTRIBUTING TYPE								
14782	75-60-*	5"	5"	5½"	14005	3 (Page 63)	10146-B	10127
14783	100	6½"	6½"	7½"	14001	535 (Page 63)	10146-B	10127
14784	150	8½"	8½"	10"	14012	570 (Page 64)	10146-B	10300
14792	500-300	13¾"	12½"	14"	14025	585 (Page 69)	As Regularly Included	
* 40 or 25 watt lamp may be used with No. 14782 by specifying "Supply No. 12100 Holder."								
SEMI-CONCENTRATING TYPE								
14785	200	9"	11¼"	12¾"	10417	810* (Page 50)	10146-B	10367
14786	500-300	12¾"	13¾"	15¾"	14004	848 (Page 70)	As Regularly Included	
14787	150-100	6¾"	9"	10½"	10517	844 (Page 65)	10146-B	10300
14790	1500-750	24"	20¾"	23"	14002-C	590 (Page 72)	As Regularly Included	

*These numbers are the reflector only as used in interior floodlights. Flanges supplied unfinished, are generally painted to match the ceiling.

FITTINGS

Holders for X-Ray or Curti-Strip Sockets are easily attached, held secure by tightening screws over "slotted ear."



CAT. No.

Sockets, Medium Screw Base

- 8051 Porcelain socket without shell—screw terminals
- 8117 Porcelain socket without shell with pigtailed
- 8052-S Porcelain socket and shell with $\frac{3}{8}$ " side outlet
- 8053-B Porcelain socket and shell with $\frac{3}{8}$ " back outlet
- 8054-SS Porcelain socket and shell with $\frac{3}{8}$ " outlet on two sides
- 8055-SB Porcelain and shell with $\frac{3}{8}$ " outlet in side and back
- 8251-S Porcelain socket and shell with $\frac{1}{2}$ " side outlet
- 8257-B Porcelain socket and shell with $\frac{1}{2}$ " back outlet
- 10145-B 3" outlet box unit (10145 cover with 8051 socket)
- 10146-B 4" outlet box unit (10146 cover with 8051 socket)

Sockets, Mogul Screw Base

- 8099-S Porcelain socket and shell with $\frac{3}{8}$ " side outlet
- 8100-B Porcelain socket and shell with $\frac{3}{8}$ " back outlet
- 8102-SB Porcelain and shell with $\frac{3}{8}$ " outlets in side and back
- 8103 Porcelain socket only—screw terminals
- 8300-B Porcelain socket and shell with $\frac{1}{2}$ " back outlet
- 8301-S Porcelain socket and shell with $\frac{1}{2}$ " side outlet

Holders

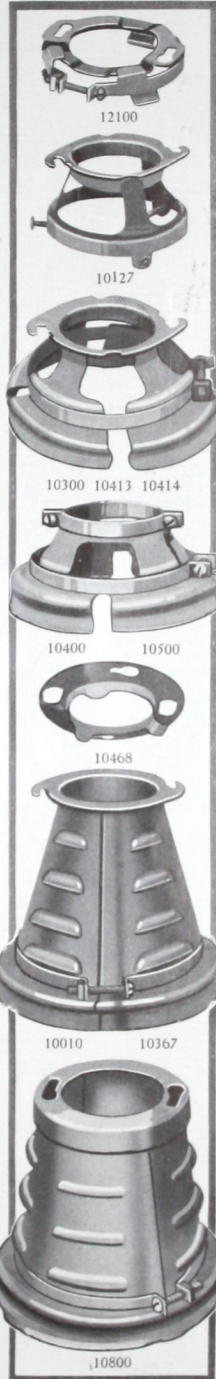
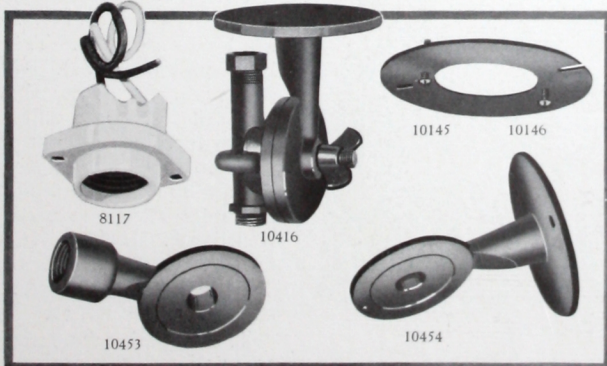
("V. P." means Vibration Proof)

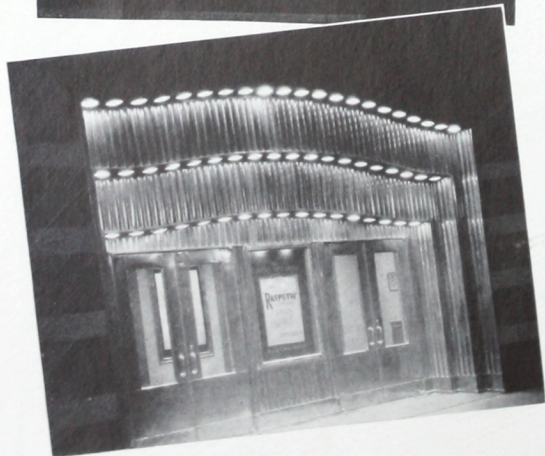
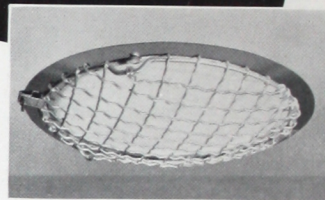
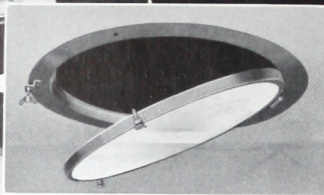
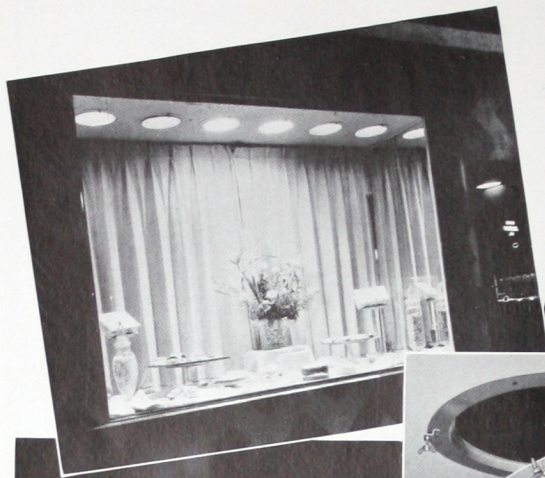
- 10012 Holder extension used only with No. 10300 holder on No. 844 reflector to permit using 150 (instead of 100) watt lamp
- 12100 2 $\frac{1}{4}$ " Form "O" (V. P.) for X-Ray and CurtiStrip sockets
- 10127 2 $\frac{1}{4}$ " Form "H" holder for X-Ray and CurtiStrip sockets
- 10300 3 $\frac{1}{4}$ " Form "A" (V. P.) for X-Ray and CurtiStrip sockets
- 10400 3 $\frac{1}{4}$ " Form "A" (V. P.) for standard brass shell sockets
- 10500 3 $\frac{1}{4}$ " Form "A" (V. P.) holder for standard porcelain sockets
- 10010 X-Ray 3 $\frac{3}{4}$ " (V. P.) holder. Used with No. 1010
- 10367 X-Ray 3 $\frac{1}{4}$ " (V. P.) holder. Used with Nos. 338 and 810
- 10413 X-Ray 5" (V. P.) holder. Used with Nos. 900, 910, 585
- 10414 X-Ray 5" (V. P.) holder. Used in Nos. 88, 808, 888 and 848
- 10467 Form "X" 3 $\frac{3}{4}$ " holder. Used with 400, 410, 500, 510
- Adapter Ring to use Form "X" holders on X-Ray sockets
- 10800 X-Ray 3 $\frac{3}{4}$ " (V. P.) holder. Used with Nos. 33-A and 804 reflector. May be used with Nos. 400, 410, 500, 510

Other Fittings

- 10145 3" round outlet box cover for No. 8051 or 8117 sockets
- 10146 4" round outlet box cover for No. 8051 or 8117 sockets
- 10416 Complete base for interior floodlights
- 10453 Stud base threaded for $\frac{1}{2}$ " pipe, on Nos. 303-A, 808.
- 10454 Cast base only for interior floodlights
- 10570 Stud base similar to 10453, but with $\frac{3}{8}$ " male thread for mounting interior floodlights on CurtiStrip No. 19. Nipple Attachment

STANDARD PACKAGE: Sockets, Holders and Box Covers is Ten





Recessed Lighting Using Plain or Hinged Ceiling Units

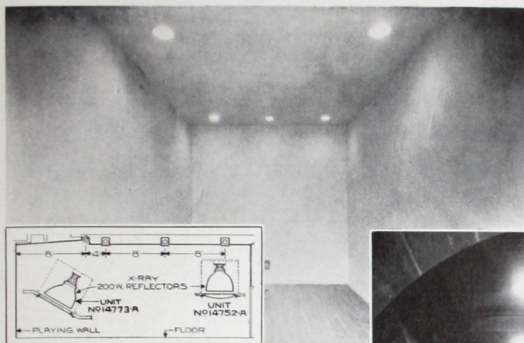
*For Suggestions on Planning Recessed Lighting See
Pages 61 and 62*

For Catalog Numbers of Complete Units—Pages 77-80

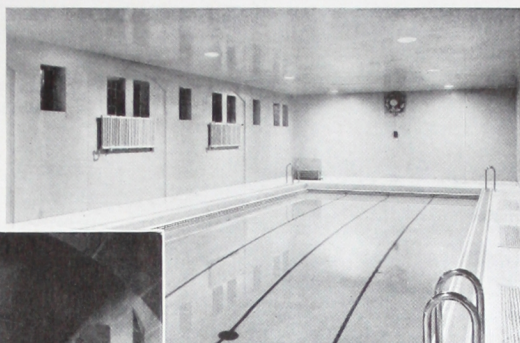
CURTIS Engineers have fostered the practice of recessing all of the lighting equipment above the ceiling by developing a complete line of standard and inexpensive ceiling fittings. These are available for quick delivery, with or without glass and with wire guards where these may be necessary. Four sizes, in many combinations with or without guards, offer complete flexibility.

The photographs on this page show: (Top right) Hockey Arena with No. 14772-A semi-concentrating 1500-watt units. This includes No. 590 "Big Boy" unit (Page 72). (Upper left) This window display in the corner shows application of concentrating 100-watt unit No. 14759-A which includes No. 844 reflector (Page 26). (Center) For silhouette and entry lighting: An effective, economical and practical application in which concentrating units should be used (with No. 804 or 842 Reflectors). (Below) The use of small size units for lighting entrances to theatres, restaurants, etc. This application also effective for gasoline service stations, barbecues, etc.

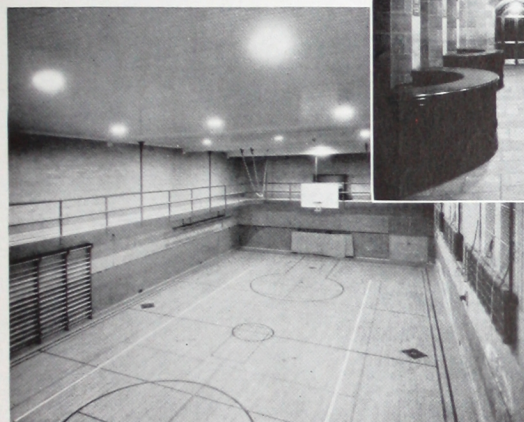
These and the photographs on Page 76 will bring to mind many opportunities for this equipment.



Squash and Handball Courts. End playing wall lighted with No. 14773-A or 14781-E spaced 24" o.c. No. 14752-A on approximately 56" by 96" centers.



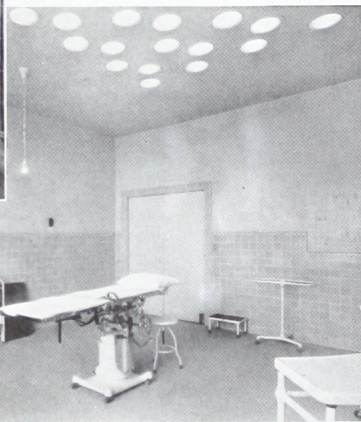
Indoor Swimming Pools. Recessed distributing 200 watt units spaced 12' to 15' o. c., provide excellent lighting both in and out of the water.



Gymnasiums and Armories. Recessed X-Ray Reflectors with wire guards offer no obstruction and provide uniform lighting without glare over the entire area.



Corridors, Halls, Lobbies, Etc. (Above) Combining recessed lighting in the architectural or decorative scheme offers many possibilities.



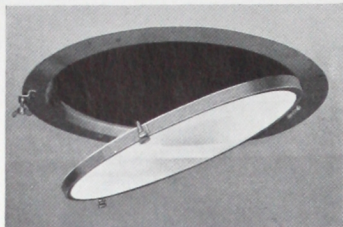
Hospital Operating Room. 15 No. 33-B (page 48) above No. 13202-B hinged unit provides approximately 500 foot-candles concentrated on the Operating Table.



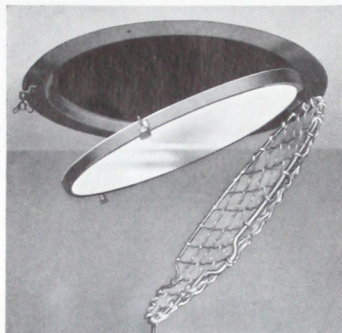
Churches and Assembly Halls. Each ceiling panel has seven recessed units. Splendid example of harmony between lighting equipment and architectural design. Economical and effective.



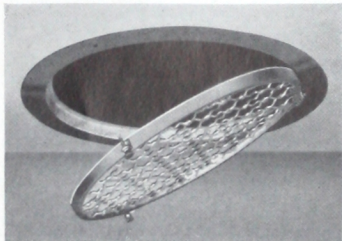
Bowling Alleys. Lighting seems brighter with lamps concealed in recessed units. Pins are lighted to higher intensity by No. 33-B above No. 13202-B placed about 60" ahead of pins.



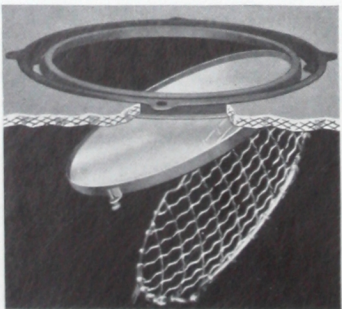
Types
A-B Hinged Rim with Glass
With Cracked Glass is Type A
With Sanded Glass is Type B



Types
C-D Hinged Rim and Guard
With Cracked Glass is Type C
With Sanded Glass is Type D



Type
E Hinged Rim with Guard
(instead of Glass) is Type E



PLASTER-RING provides firm mounting for Hinged Rims installed on plaster ceiling.

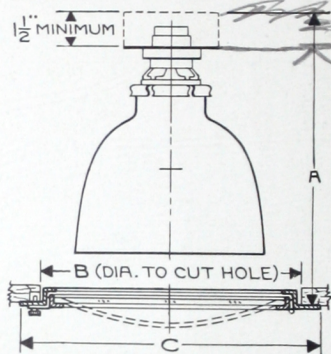
Recessed Lighting with Hinged Units

Types A, B, C, D and E as shown at the left, are supplied complete with (or without) X-Ray Reflector, holder and socket and may be specified or ordered under one catalog number (see page 78).

(For "Not Hinged" Type see Pages 79, 80)

THE hinged type of recessed unit may be installed in plaster, wood, concrete or metal ceilings. For plaster ceilings, a light weight cast iron "plaster-ring," installed by the lathing contractor, is generally used as a support for mounting the hinged ceiling rim. Plastering contractor places final coat of plaster flush with the bottom of plaster-ring. Electrical contractor installs hinged-rim and reflector. On wood or metal ceilings, wood screws or bolts may be used; in concrete ceilings, expansion bolts, plaster-ring not being required.

The large size reflectors, 750 to 1500 watts, require "attic space" above the ceiling to complete installation. Units under 500 watts capacity are installed "up" through the ceiling opening.



Dimensions for each unit on Page 78. Full size drawings may be had on application to Curtis Lighting.

Spacing: With Distributing Reflectors, spacing between units should not exceed $1\frac{1}{2}$ times the ceiling height. Where semi-concentrating reflectors are used, spacing should not exceed $\frac{3}{4}$ the mounting height. Spacing for concentrating units is determined by lighting requirements of each job.

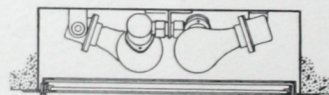
Wattage for General Lighting: Determine wattage as on open mounting from data Page 61. Multiply watts per outlet for open mounting by the following factors when fitted with glass in Types A, B, C, or D (see Example under "Light Transmission through Glass," Page 62):

Type	Fitted With	Factor
A-C	Cracked Glass	1.9
B-D	Sanded Glass	2.1

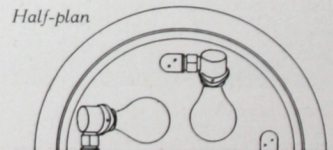
Where Space Above Ceiling Is Limited Use Shallow Round Drums: One or more lamps may be used in shallow round drums with Types A, B, C, D or E Hinged Rims (listed without reflectors at bottom of page 78). Drums seat firmly around Hinged Rim and require only 4" for recessing. They can be shipped and installed before Hinged Rims are put in place. Holes in ceiling are made same diameter as for Hinged Rim. Drums made of .035 lead coated steel (equivalent to 20 gauge) are finished bright aluminum on inside. Socket included for each lamp but no wire.

TABLE OF SHALLOW ROUND DRUMS

CATALOG NUMBER	Lamp Capacity in Watts	For Use With Hinged Unit No.	Height (A)	Dia. to Cut Hole (B)
13221	One—60 or 75	13201-A, B, C, and 14501-A, B, C	4"	7 $\frac{5}{8}$ "
13222	Two—60 or 100	13202-A, B, C, and 14502-A, B, C	4"	10 $\frac{3}{4}$ "
13223	Four—100 or 150	13203-A, B, C, and 14503-A, B, C	4"	14 $\frac{5}{8}$ "



Section above and half plan at right shows arrangement of lamps in four-light shallow drum.



Catalog Numbers for Complete Hinged Units

Including Hinged Ceiling Rim with Glass (and) or Guard and X-Ray Reflector with Holder and Socket

TYPE (Shown on Page 77)	HINGED RIM WITH	DISTRIBUTING X-RAY REFLECTOR				HAND- BALL
		No. 535 (Page 63) 100 Watts	No. 570 (Page 64) 150 Watts	No. 575 (Page 64) 200 Watts	No. 585 (Page 69) 300-500 Watts	No. 510 Refl. (Page 22) 200 Watts
		<i>Specify or Order by These Numbers:</i>				
A	Crackled Glass	14750-A	14751-A	14752-A	14753-A	14773-A
B	Sanded Glass	14750-B	14751-B	14752-B	14753-B	14773-B
C	Crackled Glass and Guard	14750-C	14751-C	14752-C	14753-C	14773-C
D	Sanded Glass and Guard	14750-D	14751-D	14752-D	14753-D	14773-D
E	Flat Guard (No Glass)	14750-E	14751-E	14752-E	14753-E	14773-E
	<i>Dimensions—(See Diagram on Page 77)</i>					
	Minimum Height .. (A)	9"	11"	11 $\frac{3}{4}$ "	16 $\frac{1}{2}$ "	11 $\frac{3}{4}$ "
	Diameter to cut hole .. (B)	7 $\frac{5}{8}$ "	10 $\frac{3}{4}$ "	10 $\frac{3}{4}$ "	14 $\frac{5}{8}$ "	14 $\frac{5}{8}$ "
	Diameter of Rim .. (C)	9 $\frac{1}{2}$ "	12 $\frac{1}{2}$ "	12 $\frac{1}{2}$ "	16 $\frac{3}{4}$ "	16 $\frac{3}{4}$ "
	<i>Fittings Supplied (unless regularly included with reflector)</i>					
	Holder	10127	10300	10300	As Reg.	10800
	Socket or Outlet Box Receptacle Unit	10146-B	10146-B	10146-B	Included	10146-B
	Plaster Ring if Required	14011	14010	14010	14009	14009

(Order plaster rings early, even before the complete unit. Have them on the job ready for use when lathing is being done. This saves time and money!)

TYPE <i>(Shown on Page 77)</i>	HINGED RIM WITH	SEMI-CONCENTRATING REFLECTOR		CONCENTRATING REFLECTOR		
		No. 710 <i>(Page 66)</i> 200 Watts	No. 848 <i>(Page 70)</i> 300-500 Watts	No. 844 <i>(Pages 26-65)</i> 100-150 Watts	No. 804* <i>(Page 48)</i> 200 Watts	No. 842 <i>(Page 49)</i> 300-500 Watts
		Specify or Order by These Numbers:				
A	Crackled Glass	14755-A	14757-A	14759-A	14760-A	14761-A
B	Sanded Glass	14755-B	14757-B	14759-B	14760-B	14761-B
C	Crackled Glass and Dished Guard	14755-C	14757-C	14759-C	14760-C	14761-C
D	Sanded Glass and Dished Guard	14755-D	14757-D	14759-D	14760-D	14761-D
E	Flat Wire Guard Only	14755-E	14757-E	14759-E	14760-E	14761-E
	Dimensions—					
	Minimum Height (A)	11"	15"	9½"	12"	15"
	Diameter to cut hole . . (B)	14⅝"	14⅝"	10¾"	10¾"	14⅝"
	Diameter of Rim (C)	16¾"	16¾"	12½"	12½"	16¾"
	Fittings Supplied (unless regularly included with reflector)			10012 and		
	Holder	10300	As Reg.	10300	10800	10414
	Socket or Outlet Box Receptacle Unit	10146-B	Included	10146-B	10146-B	8300-B
	Plaster Ring if Required	14009	14009	14010	14010	14009

Catalog Numbers for Hinged Ceiling Rim With Glass (and) or Guard

No Reflector Included

TYPE (Shown on Page 77)	DESCRIPTION	Small Size 9 $\frac{1}{2}$ " Diameter 7-Inch Glass	Medium Size 12 $\frac{1}{2}$ " Diameter 10-Inch Glass	Large Size 16 $\frac{3}{4}$ " Diameter 14-Inch Glass
	May be used with X-Ray Reflector	Nos. 3, 535	Nos. 570, 575, 696, *700, *810, 844, *804	Nos. 585, 710, 848, 842
A	Rim with Crackled Glass	13201-B	13202-B	13203-B
B	Rim with Sanded Glass	13201-C	13202-C	13203-C
C	Rim with Crackled Glass and Wire Guard	14501-B	14502-B	14503-B
D	Rim with Sanded Glass and Wire Guard	14501-C	14502-C	14503-C
E	Rim with Flat Wire Guard	14501-A	14502-A	14503-A
	Rim Only—No Glass—No Guard	13201-A	13202-A	13203-A
	Diameter to Cut Hole in Ceiling (B)	7 $\frac{5}{8}$ "	10 $\frac{3}{4}$ "	14 $\frac{5}{8}$ "
	Plaster Ring if Required	14011	14010	14009

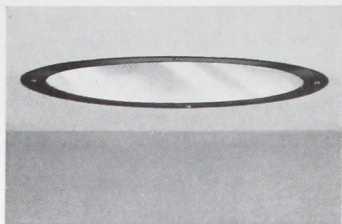
* All reflectors can be installed up through ring except as indicated (*). These must be put in place before rim is installed.

Recessed Lighting with Flange Units

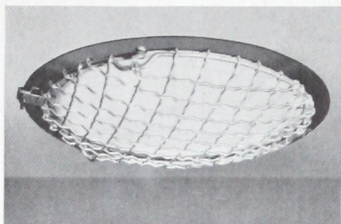
NOT Hinged

Types A, B, C, D and E as shown at the left, are supplied complete with (or without) X-Ray Reflector, holder and socket and may be specified or ordered under one catalog number (see page 80)

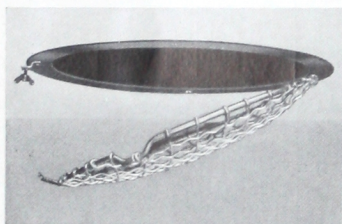
(Hinged Type on Pages 77-78)



Types A-B Flange with Glass
With Crackled Glass is Type A
With Sanded Glass is Type B



Types C-D Flange and Hinged Guard
With Crackled Glass is Type C
With Sanded Glass is Type D



Type E Flange with Hinged Guard
(No Glass Included) is Type E



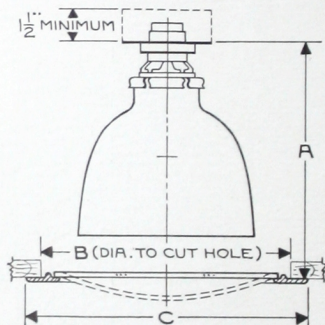
Glass slides above ceiling for re-lamping. Wire Guards are Hinged.

Page 79

CURTIS recessed reflector units that are not hinged offer the most inexpensive equipment for providing lighting with units mounted flush with the ceiling. This type may be fitted with glass or wire guard the same as is used on the "hinged" recessed units. Guards are hinged. Access to the reflector for relamping is had by sliding the glass above the ceiling, as shown in diagram at the bottom of the page.

Units may be installed on plaster, wood or metal ceilings, or where concrete ceilings have a recess provided for the reflector equipment. Plaster rings are available for the sizes indicated.

The large size reflectors, 750 to 1500 watts, require "attic space" above the ceiling to complete installation. Units under 500 watts capacity are installed "up" through the ceiling opening and do not necessarily require space above the ceiling more than that indicated for Dimension "A."



Dimensions for each unit on Page 80.
Full size drawings may be had on application to Curtis Lighting.

Spacing: With Distributing Reflectors, spacing between units should not exceed $1\frac{1}{2}$ times the ceiling height. Where semi-concentrating reflectors are used, spacing should not exceed $\frac{3}{4}$ the mounting height. Spacing for concentrating units is determined by lighting requirements of each job.

Wattage for General Lighting: Determine wattage as on open mounting from Data Page 61. Multiply watts per outlet for open mounting by the following factors when fitted with glass in Type A, B, C or D (see Example under "Light Transmission Through Glass," Page 62).

Type	Fitted With	Factor
A-C	Crackled Glass....	1.9
B-D	Sanded Glass.....	2.1

Relamping Units that are Not Hinged: Where Type A, B, C or D units with glass are used, there should be sufficient space around the reflector to lift the glass and slide it over the ceiling for the purpose of relamping. The space indicated by "A" as the minimum height allows sufficient clearance between reflector and plaster, wood or metal ceilings. The problem of installing on concrete ceilings must be studied individually. If recessed units with glass lenses are to be used, it is generally advisable to install the hinged type shown on pages 77 and 78.

Where Space Above Ceiling is Limited: Where space above ceiling is not sufficient to install reflectors (dimension "A" governs this) it will be necessary to use lamps without reflectors. Shallow Round Drums for use with Hinged Rims (Page 77) require only 4" of height.

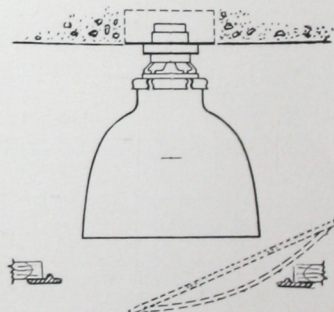


Diagram explains method of sliding glass cover to permit relamping

Catalog Numbers for Complete Flange Units—Not Hinged

*Including Ceiling Flange with Glass (and) or Guard
and X-Ray Reflector with Holder and Socket*

TYPE (See photo- graphs on Page 79)	CEILING FLANGE WITH	DISTRIBUTING X-RAY REFLECTOR					HAND- BALL
		No. 535 (Page 63) 100 Watts	No. 570 (Page 64) 150 Watts	No. 575 (Page 64) 200 Watts	No. 585 (Page 69) 300-500 Watts	No. 54 (Page 71) 750-1500 Watts	No. 510 Refl. (Page 22) 200 Watts
A B C D E	<i>Specify or Order by These Numbers:</i>						
	Crackled Glass *(Clear Glass)	14762-A	14763-A	14764-A	14765-A	*14766-A	None
	Sanded Glass	14762-B	14763-B	14764-B	14765-B	14766-B	None
	Crackled Glass and Guard *(Clear Glass)	14762-C	14763-C	17764-C	14765-C	*14766-C	None
	Sanded Glass and Guard	14762-D	14763-D	17764-D	17765-D	14766-D	None
	Guard Only (No Glass)	14762-E	14763-E	17764-E	17765-E	14766-E	14781-E
	<i>Dimensions—(See Diagram on Page 79)</i>						
	Minimum Height . . . (A)	10"	12"	12 $\frac{3}{4}$ "	17 $\frac{1}{2}$ "	26"	11 $\frac{3}{4}$ "
	Diameter to cut hole. (B)	7 $\frac{5}{8}$ "	10 $\frac{5}{8}$ "	14 $\frac{5}{8}$ "	18 $\frac{3}{4}$ "	18 $\frac{3}{4}$ "	(Ask for Template)
	Diameter of Rim . . . (C)	9 $\frac{1}{4}$ "	12 $\frac{1}{2}$ "	12 $\frac{1}{2}$ "	16 $\frac{3}{8}$ "	21 $\frac{1}{2}$ "	
	<i>Fittings Supplied (unless reg. incl. with reflector)</i>						
	Holder	10127	10300	10300	As Reg. Included	As Reg. Included	10800
	Socket or Outlet Box Receptacle Unit	10146-B	10146-B	10146-B			8251-S
	Plaster Ring if Required	14011	14010	14010	14009		14007

(Order plaster rings early, even before the complete unit. Have them on the job ready for use when lathing is being done. This saves time and money!)

*Fitted with clear glass instead of cracked glass.

TYPE (See photo- graphs on Page 79)	FOR CEILING FLANGE WITH	SEMI-CONCENTRATING REFLECTOR			CONCENTRATING REFLECTOR		
		No. 710 (Page 66) 200 Watts	No. 848 (Page 70) 300-500 Watts	No. 590 (Page 72) 750-1500 Watts	No. 844 (Pages 26, 65) 100-150 Watts	No. 804* (Page 48) 200 Watts	No. 842 (Page 49) 300-500 Watts
A B C D E	<i>Specify or Order by These Numbers:</i>						
	Crackled Glass *(Clear Glass)	14767-A	14768-A	*14772-A	14769-A	14770-A	14771-A
	Sanded Glass	14767-B	14768-B	*14772-B	14769-B	14770-B	14771-B
	Crackled Glass and Guard *(Clear Glass)	14767-C	14768-C	*14772-C	14769-C	14770-C	14771-C
	Sanded Glass and Guard	14767-D	14768-D	14772-D	14769-D	14770-D	14771-D
	Guard Only (No Glass)	14767-E	14768-E	14772-E	14769-E	14770-E	14771-E
	<i>Dimensions—</i>						
	Minimum Height . . . (A)	12"	16"	24"	10 $\frac{1}{2}$ "	13"	16"
	Diameter to cut hole. (B)	14 $\frac{5}{8}$ "	14 $\frac{5}{8}$ "	18 $\frac{3}{4}$ "	10 $\frac{5}{8}$ "	10 $\frac{5}{8}$ "	14 $\frac{5}{8}$ "
	Diameter of Rim . . . (C)	16 $\frac{7}{8}$ "	16 $\frac{7}{8}$ "	21 $\frac{1}{2}$ "	12 $\frac{1}{2}$ "	12 $\frac{1}{2}$ "	16 $\frac{7}{8}$ "
	<i>Fittings Supplied (unless reg. incl. with reflector)</i>						
	Holder	10300	As Reg. Included	As Reg. Included	10012 and 10300	10800	10414
	Socket or Outlet Box Receptacle Unit	10146-B			10146-B	10146-B	8300-B
	Plaster Ring if Required	14009	14009		14010	14010	14009

Catalog Numbers for Ceiling Flange With Glass (and) or Guard

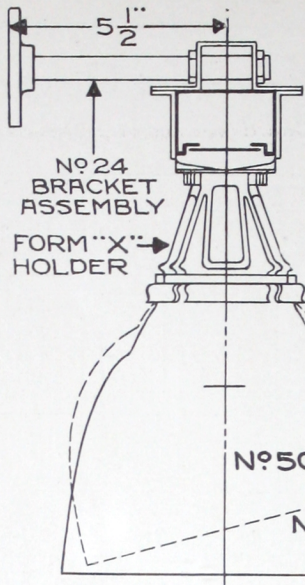
No Reflector Included

TYPE (See photo- graphs on Page 79)	DESCRIPTION	Small Size 9 $\frac{1}{4}$ -Inch Diameter 7-Inch Glass	Medium Size 12 $\frac{1}{2}$ -Inch Diameter 10-Inch Glass	Large Size 16 $\frac{3}{8}$ -Inch Diameter 14-Inch Glass	Extra Large Size 21 $\frac{1}{2}$ -Inch Diameter 18-Inch Glass
		Nos. 3, 535	Nos. 570, 575, 696, *700, *810, 844, *804	Nos. 585, 710, 848, 842	Nos. 54, 590
A B C D E F	May be used with X-Ray Reflector Nos.				
	Rim with Crackled Glass. *(Clear Glass)	13204-B	13205-B	13206-B	*13226-B
	Rim with Sanded Glass.	13204-C	13205-C	13206-C	13226-C
	Rim with Crackled Glass and Guard. *(Clear Glass)	14515-B	14516-B	14517-B	*14518-B
	Rim with Sanded Glass and Guard	14515-C	14516-C	14517-C	14518-C
	Rim with Guard	14515-A	14516-A	14517-A	14518-A
	Rim Only—No Glass—No Guard.	13204-A	13205-A	13206-A	13226-A
	Diameter to Cut Hole in Ceiling (B)	7 $\frac{5}{8}$ "	10 $\frac{5}{8}$ "	14 $\frac{5}{8}$ "	18 $\frac{3}{4}$ "
	Plaster Ring if Required	14011	14010	14009	

* All reflectors can be installed up through ring except as indicated *. These must be put in place before rim is installed.
*Fitted with clear glass (instead of cracked). Use only where attic space above ceiling permits working above ceiling.

SCALE DETAILS

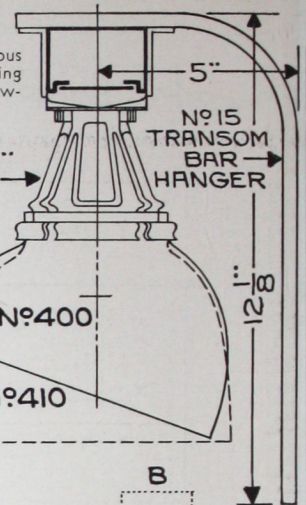
These scale details supplement unit drawings on the various pages and assist the architect, contractor or engineer in detailing equipment or determining exact space required. Full size drawings may be had on request to Curtis Lighting.



SHOW WINDOW REFLECTORS SCALE 3"=1'

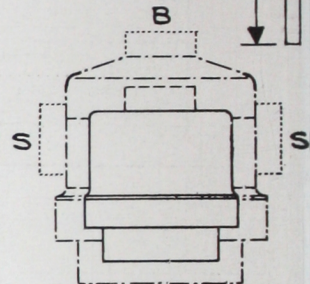
From these details at right and left, various methods can be readily determined for mounting these four standard X-Ray Reflectors on CurtiStrip for show window or interior lighting. When recessed, bottom of No. 400 is 20° from horizontal; No. 500, 17° from horizontal. No. 410, 510 are horizontal

FORM "X" HOLDER



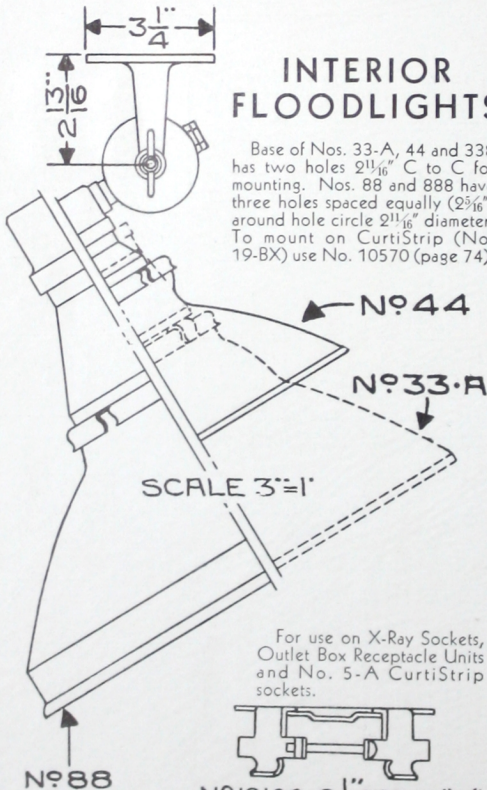
X-RAY SOCKETS SCALE 6"=1'

X-Ray standard medium base or mogul sockets are provided in various combinations. "B" indicates outlet is at back, "S" on one side, "SS" on two sides. "SB" means outlets are on back and one side. See page 74 for numbers and illustrations of both 3/8" and 1/2" sockets.



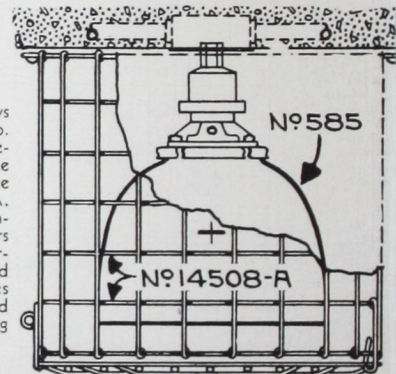
INTERIOR FLOODLIGHTS

Base of Nos. 33-A, 44 and 338 has two holes 2 11/16" C to C for mounting. Nos. 88 and 888 have three holes spaced equally (2 3/16") around hole circle 2 11/16" diameter. To mount on CurtiStrip (No. 19-BX) use No. 10570 (page 74).



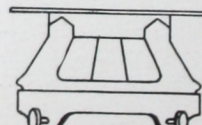
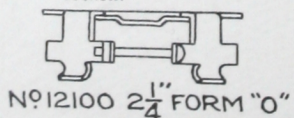
WIRE GUARDS SCALE 1 1/2"=1'

Drawing at right shows No. 585 Reflector in No. 14508-A guard. This reflector and guard may be secured by specifying one number, viz., 14777-A. (See page 73 for dimensions and catalog numbers of all types.) Note clearance between guard and reflector which provides ample protection. Guard is fastened to ceiling by lag screws or toggle bolts.

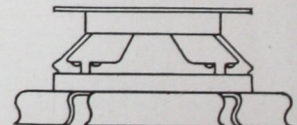


X-RAY HOLDERS SCALE 6"=1'

For use on X-Ray Sockets, Outlet Box Receptacle Units and No. 5-A CurtiStrip sockets.

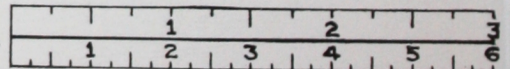


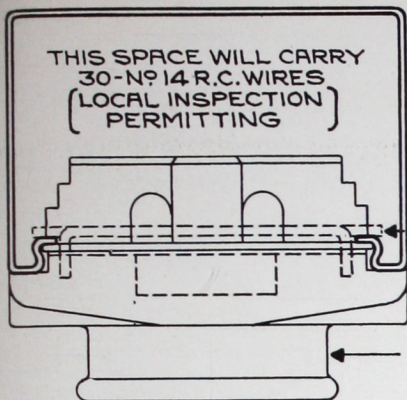
No. 10127 2 1/4" FORM "H"



No. 10300 3 1/4" FORM "A"

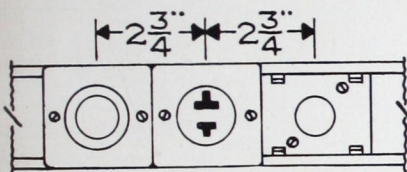
SCALE 1"=1"
SCALE 3 1/2"=6"





CURTISTRIP

Full size detail above shows large capacity wireway in CurtiStrip. Outlets can be spaced as close as $2\frac{3}{4}$ " on centers (see drawing below), or to any greater spacing length required. Cut cover spacers $2\frac{3}{4}$ " shorter than center to center measurements.



NO 5 NO 4 NO 19
NO 5-A PLUG NO 19-BX
SOCKETS IN ATTACH'S.

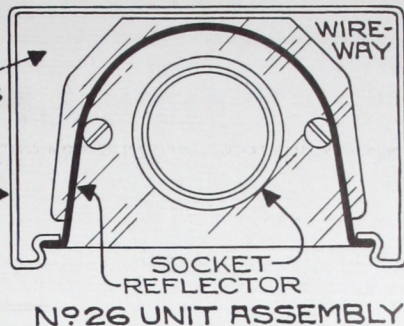
FULL SIZE

WIREWAY CAPACITY
16-NO 16
STANDARD ASBESTOS
COVERED FIXTURE
WIRE

NO 1 CURTISTRIP

NO 19 NIPPLE
ATTACH.

NO 5 SOCKET

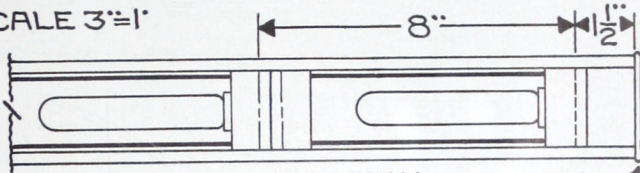


NO 26 UNIT ASSEMBLY

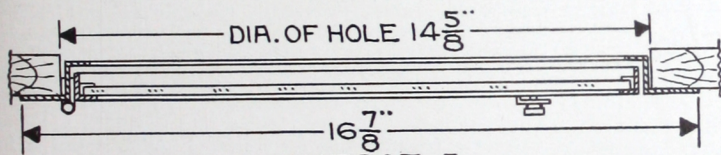
LIGHTSTRIP

Full size detail above shows compact arrangement of this lighting channel. Size only $1\frac{3}{8}" \times 2\frac{1}{2}"$. Wireway provides ample capacity for 16 No. 16 standard asbestos-covered fixture wires. LightStrip is made with CurtiStrip. Socket and reflector snaps into the patented lip. CurtiStrip flexibility permits spacing between lamps from minimum of 8" on centers (shown below), to any greater spacing needed. LightStrip is mounted with standard CurtiStrip fittings. Note: Size with Nos. 27 and 28 is $1\frac{3}{4}" \times 2\frac{1}{2}"$.

SCALE $3"=1'$



PLAN VIEW
NO 26 LIGHTSTRIP NO 6
END CAP



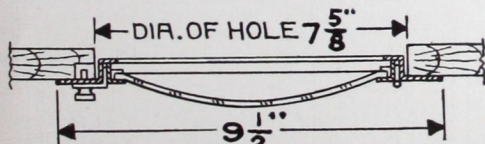
NO 13203-A

RECESSED REFLECTOR UNITS

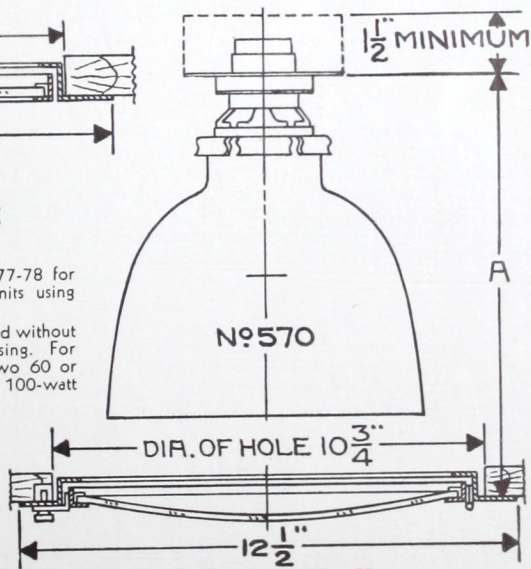
SCALE $3"=1'$

Numbers shown are for hinged rims only—no glass. See pages 77-78 for complete catalog numbers and dimensions with various reflector units using cracked or sanded glass and wire guards.

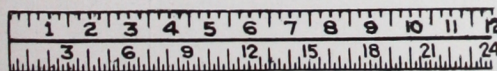
Where space above ceiling is limited, a shallow round drum may be used without reflectors (see page 77). Only 4 inches of space is required for recessing. For one 60 or 75-watt lamp use small size (Type No. 13201-A). For two 60 or 75-watt lamps use medium size (Type No. 13202-A). For four 60, 75 or 100-watt lamps use large size (Type No. 13203-A).



NO 13201-A



NO 13202-A



SCALE $3"=1'$

SCALE $1\frac{1}{2}"=1'$

Suggested Specification Paragraphs

These general specifications cover important points which should be considered in specifying or bidding on standard lighting equipment. Their use is recommended to save time when writing specifications. General specifications such as these, will generally follow the details covering quantities of material, etc.

General Specifications for Silvered Glass Reflectors:

Reflectors shall be of high quality commercial blown glass, properly annealed, virtually free from color, "seeds," bubbles and scratches, the edges carefully and neatly ground down without cracks or chipping. The reflecting surface shall be pure silver—and as seen through the glass shall be white, without apparent tinge of yellow, pink or brown, in other words—free from stains or other defects. The silver reflecting surface shall be protected by a suitable backing which will protect it from ordinary interior atmospheric conditions and withstand the heat of the lamp at its rated capacity.

Any reflectors selected at random from those to be installed shall successfully pass the following tests.

No. 1. Sulphur Fumes Test: The back of the specimen shall be covered with strips of wide rubber bands or pieces of tire inner tube and baked in an oven to a temperature of 350° F. for a period of three hours. At the end of that time the reflecting surface should not show any darkening or discoloration.

No. 2. Heat Test: Bake specimen in an oven at 600° F. for one hour. At the end of one hour the silver shall be in substantially the same condition showing no white mottling due to heat, or discoloration or stain due to chemical reaction. The backing shall show no peeling or blistering.

Whole reflectors should be used for test unless at the architect's discretion instructions may be given that reflectors be cut or broken into pieces to permit comparison of an untested piece from each reflector with pieces under test.

Failure of the specimens to stand up under either one or both of these tests shall be sufficient cause for rejection.

General Specifications for Window Reflectors: (All types 150 to 500 watts capacity). All the reflectors herein specified shall be constructed with "dimples" or indentations in the glass to accommodate standard accessories for special or color lighting effects. Such "dimples" to be on the inside so that accessories if, as and when required, can be readily snapped into place without the necessity of having special fittings made.

General Specifications for Holders Used to Support Reflectors: Holders which clamp around the neck of reflector with equal pressure at all points are to be used. This type has a single machine screw which tightens a small metal band to compress the holder and insures the reflector of being held secure in spite of vibration.

General Specification for Interior Floodlights: Interior Floodlights shall have a round cast iron base $3\frac{1}{4}$ " diameter, universal swivel adjustment and a large ($1\frac{1}{2}$ " to $1\frac{3}{4}$ ") wing nut to securely lock floodlight in position. Reflectors shall be of correct design for the light control required and be made so that standard accessories for color lighting or eliminating spill-light (if later required), can be provided without constructing special fittings.

General Specifications for CurtiStrip: The wiring channel shall be of cold rolled steel .040" thick, $2\frac{1}{2}$ " wide and $1\frac{5}{8}$ " deep, with flat cover that snaps tightly into "lips" at the top of the channel.

The porcelain sockets shall be made in two pieces with terminals arranged so that wires can be run "thru" without soldering or compounding. Sockets shall clamp to the top of the channel and extend over the flat cover that forms spacer between them. Porcelain plug-in receptacles of similar two-piece construction shall have combination slots for parallel and tandem plugs and shall be rated 15A-125V, 10A-250V.

Ends of the channel shall be closed with end caps or with service splice boxes. Sections of the wireway shall be held together by inside couplings bolted to the wireway. All end caps, service splice boxes, couplings, etc. shall be bolted to the wireway to provide a continuous ground.

Wireway shall be smooth and straight, with all inside screws or bolts countersunk to offer a smooth surface to the conductors. The whole system must be of sufficient rigidity and mechanical strength to properly support itself and attached equipment. All metal parts including channel, cover and fittings shall have approved rust-resisting electro plating.

General Specification for LightStrip: The LightStrip unit shall consist of a polished aluminum reflector and one piece porcelain socket which shall "snap" securely into "lips" at the top of a cold rolled steel channel .040" thick, $2\frac{1}{2}$ " wide and $1\frac{5}{8}$ " deep. A flat cover included with the channel which also snaps into these "lips" shall be cut to required length to make cover and spacers between units.

General Specifications for Recessed Lighting Units:
Hinged Type: Hinged type ceiling units shall consist of hinged ceiling rim fitted with clear, crackled or sanded heat resisting glass and/or wire guard as previously indicated. Rim shall be made of not less than .031 U. S. gauge steel and shall be zinc plated. Wire guards when specified shall be made of heavy steel wire—tinned. The reflector units above the ceiling rim to be of one piece silvered glass mounted so that the direct light cut-off will be on the rim of the ceiling ring and not on the glass. (See General Specifications for Silvered Glass Reflectors.)

Flange Type NOT Hinged: Ceiling rims shall consist of light weight cast iron finishing flange, not hinged, which shall support heat resisting clear, sanded or crackled glass and/or guard as previously indicated. Wire guards when specified shall be of hinged type and shall be made of heavy steel wire—tinned. Flanges to be unfinished. (See General Specifications for Silvered Glass Reflectors.)

Flange Type NOT Hinged—No Glass—No Guard: Ceiling flanges shall be of light weight cast iron constructed so that reflectors will rest on the top of the flange with sufficient clearance between side of reflector and cut-out portion of ceiling to allow for expansion in the glass. (See General Specifications for Silvered Glass Reflectors.)

Other Curtis Equipment

In addition to the material covered in the preceding pages, Curtis Lighting manufactures standard or specially designed material to provide a complete lighting service, including floodlighting. The basic principal for all Curtis Lighting equipment is in the famous X-Ray Reflectors, known the world over for their high efficiency, accurate light-control and durability. Use Curtis equipment —

for Lighting

Altars
Armories—Arenas
Art Galleries—Museums
Athletic Fields
Auditoriums

Ballrooms
Bandstands
Banks
Barber Shops
Billiard Rooms
Bowling Alleys
Brokers' Offices

Cafeterias
Chapels
Churches—Sunday
Schools

Clubs
Color Lighting
Concealed Lighting
Cove Lighting
Curtis Adapters

Department Stores
Display Rooms
Drafting Rooms

Eye Comfort Lighting
Exclusive Shops

Floodlighting
Footlights

Hospitals—Nurseries
Hotels

Indirect Lighting

Laboratories
Libraries
Lodges

Markets
Memorial Windows
Moderne Lighting
Monuments

Night Clubs

Offices
Orchestra Pits

Panel Lighting
Pedestal Lighting
Power Plants
Printing Plants

Public Buildings

Railway Stations
Reading Rooms
Recessed Lighting
Reflector Lamps
Residences
Restaurants

Schools
Skylights
Solariums
Sports—Games
Stages
Stock Exchanges
Stores—Shops

Telephone Exchanges
Theatres

There is an X-Ray Reflector for every lighting need for all classes of interiors, and for outdoor floodlighting.

Curtis Lighting products are catalogued and listed under four general headings. This Handbook (No. 25) is

X-Ray Schedule (XR)

includes the following groups only:

Window Reflectors, Fittings and Accessories

Interior Floodlights, Fittings and Accessories

Industrial Reflectors and Fittings

Standard Recessed Lighting Equipment

CurtiStrip, LightStrip and X-Raylet Fittings

General Lighting Reflectors, Wire Guards and Equipment

Display Case Lighting Equipment

Other Curtis Schedules are

Floodlighting Schedule (FL)

includes only:

Floodlighting Projectors, Color Lenses, Accessories
and Parts for Use with X-Ray Projectors

Special Schedule (SP)

includes the following groups:

Bank-Ray, Curtis Bank Lighting Equipment
Cove Reflectors and Accessories

Luminaries Made of Bronze, Iron or Other
Materials

Curtis X-Ray Stage Lighting Equipment
Units, Fittings or Accessories, Not Regularly
Listed or Supplied as Standard Material

Eye Comfort Schedule (EC)

includes the following groups only:

Standard Eye Comfort Indirect Lighting
Luminaries

Curtis Adapters for Reflector Lamps and
Candle Fixtures

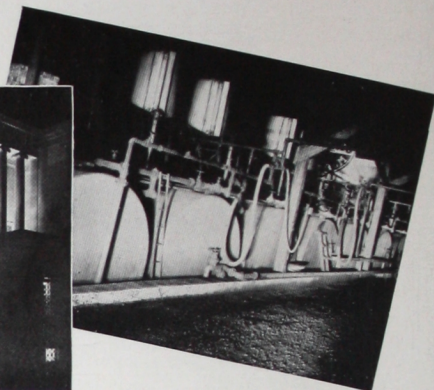
Standard Ceiling Fittings and Accessories

Specialties Such as Glo-Ray, Dua-Light
Desk and Counter Lighting Units

Wire Guards for X-Ray Reflectors for General
Lighting and Other Direct Lighting Units

The following pages give brief data for planning floodlighting and indirect lighting. It is obviously impossible to completely cover the comprehensive scope of each of these schedules in such limited

space, but the information included will generally be found sufficient for all practical purposes. Handbooks for each schedule make it easy to plan lighting with Curtis equipment.



Curtis X-Ray
Projectors
are included
in
Schedule "FL"

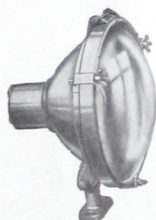
OTHER CURTIS EQUIPMENT—(Continued)

FLOODLIGHTING

with

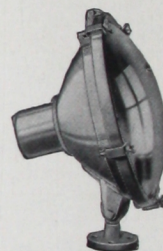
**X-Ray
Projectors**

Handbook
No. 777 gives
complete data
and list of
equipment



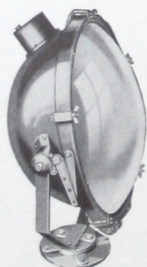
"STAR"

200-250 Watt Size
Diameter 13 in.
Depth 12 in.
Height 16½ in.



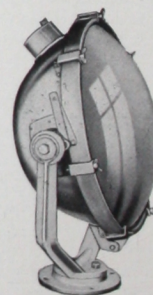
"MOON"

500 Watt Size
Diameter 17½ in.
Depth 13½ in.
Height 20¾ in.



"SUN, JR."

750-1000 Watt Size
Diameter 19 in.
Depth 12 in.
Height 26½ in.



"SUN"

1500 Watt Size
Diameter 23 in.
Depth 14¾ in.
Height 31 in.

THE field of floodlighting may be divided into two general classifications:
First: The illumination of buildings and monuments for their advertising value, or for their aesthetic effect. This type of floodlighting involves the illumination of vertical surfaces. The floodlights are located either some distance from the surface to be lighted, or they may be mounted on the structure itself. The quantity of light needed for this type of problem is dependent upon the attraction value desired, on the color of the structure, and on the brightness of the surrounding area.

Second: The illumination of large areas for outdoor sports, parking space and industrial uses. In this classification the units are mounted on poles, or towers, for illuminating the horizontal area. The amount of light to be provided for this type of installation is dependent upon the activities involved, the light being needed for utilitarian rather than artistic purposes.

Easy to Plan with Curtis X-Ray Projectors

Four sizes of X-Ray Floodlighting Projectors provide complete flexibility,—white or color lighting effects. They are weatherproof, have many exclusive features, and are equipped with genuine Golden Armored X-Ray Reflectors!

CURTIS engineers have developed this simple method for planning the wattage for a floodlighting installation: (1) Multiply the wattage per square foot indicated in table below by the number of square feet to be lighted. (2) Spacing between projectors, or banks of units, when located at some distance from the area being lighted, should not be greater than the distance from projectors to the area lighted. (3) Divide total wattage into proportion for each location in which projectors are to be placed.

Foot-Candles and Wattage Capacity for Floodlighting

	Foot Candles	Watts* per Sq. Ft.		Foot Candles	Watts* per Sq. Ft.
BUILDINGS AND MONUMENTS			RECREATIONAL AREAS		
In Bright (Light Surface)	10	2.2	Baseball.....	15	3.0
Surroundings (Dark Surface)	20	4.5	Bathing Beaches.....	1	0.2
In Dark (Light Surface)	6	1.3	Drill Fields.....	3	0.5
Surroundings (Dark Surface)	12	2.5	Football.....	12	2.5
INDUSTRIAL			Golf.....	10	2.0
Building Excavation.....	3	0.5	Hockey.....	8	1.5
Gasoline Station Area.....	4	.8	Playgrounds.....	4	0.7
Parking Space.....	1	.2	Stadiums.....	12	2.5
Protective, Industrial.....	1	.2	Swimming Pools.....	5	1.2

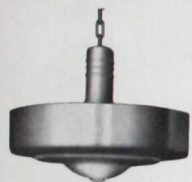
*NOTE: A depreciation factor has already been allowed in calculating watts per square foot.

Curtis Engineers will help plan effective floodlighting.



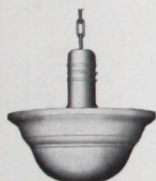
Opaque Bowl

Nos. 5020-5023-6020
Nos. 5000-5003-6000 Without
Ornaments or Tassel.
Finish: Antique Silvertone.



Opaque Bowl

No. 7300
Finish: Washable Ivorytone.



Opaque Bowl

No. 6100
Similar in Design are
Nos. 6400-6800
Finish: Washable Ivorytone.



Opaque Bowl

No. 5050-6040
Finish: Silver Grey.



OTHER CURTIS EQUIPMENT—(Continued)

CURTIS LUMINAIRES

For Indirect Lighting

This Is Eye Comfort Schedule (EC)

Standards of Illumination

For Interior	Foot Candles Recommended	For Interior	Foot Candles Recommended	For Interior	Foot Candles Recommended
Auditoriums.....	5	Hospitals: Corridors....	3	Restaurants.....	8
Automobile Display....	15	Wards.....	5	Schools: Auditoriums....	8
Banks: Lobby.....	10	Private Rooms.....	8	Class Rooms.....	12
Cage and Office.....	15	Library.....	12	Drawing Rooms.....	25
Churches: Auditorium....	3-5	Lodge Rooms.....	6	Sewing Rooms.....	25
Sunday School Room....	8	Offices: General Work....	15	Library.....	12
Drafting Room.....	25	Reception Rooms.....	6	Stores.....	12-15

DETERMINE "Foot Candle" intensity from table above. In first column of table below find area of your outlets (or nearest area). Watts per outlet required is indicated at right opposite this, under intensity you require.

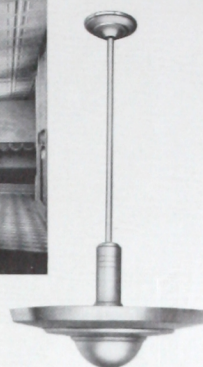
Table to Quickly Determine Wattage per Outlet

Average Area per Outlet in Square Feet	Ceiling Height	Watts per Outlet to Produce		
		6 to 10 Foot-Candles	10 to 15 Foot-Candles	15 to 25 Foot-Candles
81	9.0'		200	300
100 to 144	9.5 to 11.0'	200	300	500
169 to 225	11.5 to 15.0'	300	500	750
256	16.0'	500	750	1000

Standard Designs Available for Quick Delivery

Regularly supplied in standard finish indicated (other finishes available on order).

Cat. No.	Code Name	Lamps, Watts	Bowl Diam.		Suspension	Finish	Metal
			Diam.	Depth			
5020	Amarine	(2) 150 or 100	15 1/2"	4 1/8"	36"	Antique	Brass
5023	Yuklas	(3) 150 or 100	15 1/2"	4 1/8"	36"	Silvertone	Brass
6020	Sardonyx	(3) 200	19"	5 3/8"	40"		
5000	Sapphire	(2) 150 or 100	15 1/2"	4 1/8"	36"	Antique	Brass
5003	Pearl	(3) 150 or 100	15 1/2"	4 1/8"	36"	Silvertone	Brass
6000	Coral	(3) 200	19"	5 3/8"	40"		
7300	Sard	500 or 300	18"	7"	36"	Washable Ivorytone	Steel
6100	Opal	500 or 300	14"	6 3/8"	36"	Washable Ivorytone	Steel
6400	Ruby	500 or 300	16 1/4"	8"	36"	Washable Ivorytone	Steel
6800	Emerald	1500, 1000 or 750	20 1/2"	10"	48"		
5050	Gem	500 or 300	13 3/8"	6 3/4"	36"	Silver	Steel
6040	Jewel	1500, 1000 or 750	18"	9"	48"	Grey	Steel
2200	Eclipse, Jr.	200	15 1/2"	3 3/4"	36"	Natural Satin Aluminum	Aluminum
5500	Eclipse	500 or 300	19 1/8"	5 1/2"	36"	Natural Satin Aluminum	Aluminum
2205	Halo, Jr.	200	15 1/2"	3 3/4"	36"	Natural Satin Aluminum	Aluminum
5505	Halo	500 or 300	19 1/8"	5 1/2"	36"	Natural Satin Aluminum	Aluminum
2210	Aureole, Jr.	200	15 1/2"	3 3/4"	36"	Natural Satin Aluminum	Aluminum
5510	Aureole	500 or 300	19 1/8"	5 1/2"	36"	Natural Satin Aluminum	Aluminum
7200	Carnelian	500 or 300	19"	6"	36"	Washable Ivorytone	Steel
9000	Jade	500 or 300	18 1/2"	7 1/2"	36"	Natural Satin Aluminum	Aluminum
9100	Jasper	500 or 300	18 1/2"	8 1/2"	36"	Natural Satin Aluminum	Aluminum
9400	Apatite	500 or 300	18 1/2"	12"	36"	Natural Satin Aluminum	Aluminum
9700	Hematite	1500, 1000 or 750	24"	15 1/2"	48"	Natural Satin Aluminum	Aluminum
9720	Steatite	1500, 1000 or 750	24"	15 1/2"	48"	Natural Satin Aluminum	Aluminum



Opaque Bowl

Nos. 2200-5500

Luminous Bowl

Nos. 2205-5505

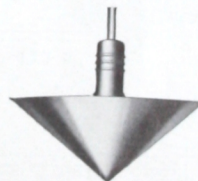
Nos. 2210-5510
Smaller rounded part of
fixture opaque
Finish: Natural Satin
Aluminum.



Opaque Bowl

No. 7200

Finish: Washable Ivorytone

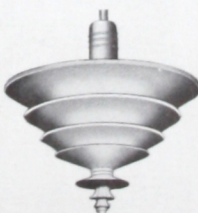


Opaque Bowl

No. 9000

Same fixture with truncated
bowl is No. 9100

Finish: Natural Satin
Aluminum.



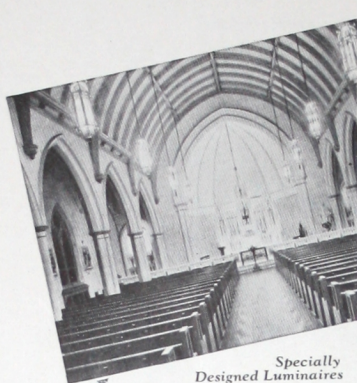
Louvered Bowl

Luminaire with under side of
louvers surfaces lighted, are
Nos. 9400-9700
No. 9720 has two louvered
surfaces ornamented.

Insist
on
Genuine

**X-Ray
Reflectors**

Standard
for
All Lighting!



Specially
Designed Luminaires



Cove and
Panel Lighting

OTHER CURTIS EQUIPMENT — (Continued)

Special Lighting Equipment

This is Special Schedule (SP)

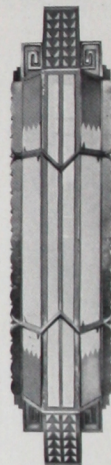
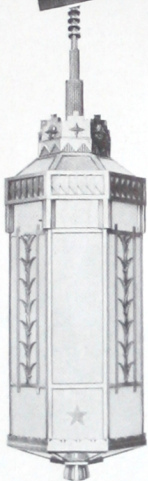
Luminaires

CURTIS specializes in the design and production of luminaires which are pleasing in form, line and decoration. Curtis artists are original in their ideas and create designs which embody either the moderne or the period style. Ideas of the architect are correctly interpreted. The spirit of the building is reflected in Curtis luminaires.

Curtis artists are known for their modern and progressive lighting ideas. The lighting, whether from especially designed luminaires which conceal the light sources or from those which produce diffused direct lighting, is carefully planned to provide the ideal system of illumination for each room or interior.

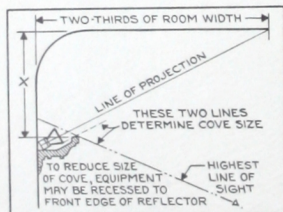
Skilled craftsmen produce Curtis luminaires in bronze, brass, iron or the more moderne metals such as benedict-nickel, aluminum and stainless steel. The beauty of Curtis luminaires is enhanced by careful finishing. A wide range and variety of finishes is provided the architect, contractor and owner for Curtis luminaires.

The splendid results accomplished in the many standard lighting installations pictured in this book are a partial indication of the service which Curtis designers and engineers place at the disposal of architects, engineers, contractors and others interested in advanced lighting. Curtis luminaires are built in compliance with A. L. E. A. and N. E. M. A. Codes.



Cove Lighting

In planning cove lighting, size of cove, complete concealment of equipment and uniform distribution of light on ceiling are important. Location of reflector and equipment in the cove and line of sight determine size of cove, as explained by diagram at left. The distance cove will project can be reduced as much as the distance equipment can be recessed into the wall up to the front edge of the reflector.



The distance "X", from top of cove to ceiling should never be less than one tenth of the room width.

Reflectors—There are two types of reflectors used for average cove lighting. **Concentrating Types**—For shallower ceilings where cornice is relatively close to ceiling. EC-52 X-Ray Reflector (60-watt size) is for small coves. EC-74 Ray Reflector (100-watt size) is for larger coves or in wide rooms. **Distributing Types**—For average conditions. There are four sizes—60, 100, 150 or 200 watts. This type can be mounted horizontally or vertically.



Wattage—Approximately three watts per square foot of floor area is required to produce 5 to 10 foot candles in rooms with ceiling height not exceeding the room width.

Panel Lighting

For even lighting of glass panels spacing between reflectors should not exceed $1\frac{1}{2}$ times the distance from the glass to the center of the lamp. Using flashed opal glass four watts per square foot of floor area will give approximately 6 to 8 foot candles.



Distributing Type
EC-50, EC-100,
EC-150, EC-200.

Color Lighting

Produced by fitting the same X-Ray Reflectors used for white lighting with color lens units consisting of frame with red, blue, green or amber natural colored heat resisting glass. Wattage for each color is the same as for white lighting.



"Colrenz" Frames
Mounted in New
Simple "Clip Hinge"
Frame.
Especially appreciated by maintenance man.

Engineering Service

CURTIS lighting is planned lighting, with each job engineered to provide the correct amount of illumination for the work to be performed. The engineering data in this handbook has been simplified to the point of making it easy to plan regular and unusual lighting effects with standard X-Ray Reflec-

tor equipment. Lighting recommendations and specifications will be submitted in detail by Curtis Resident Illuminating Engineers located in the world's principal cities or by factory organizations located at Chicago, U. S. A., at Toronto in Canada, and at Antwerp, London and Paris in Europe.

Use Lamp Specified

Size of lamp is indicated for each reflector, but lamp bulbs are not supplied by Curtis Lighting.

X-Ray Reflectors provide accurate light control when used with the lamp and holder for which they are designed. Do NOT substitute a larger or smaller lamp. Always use the lamp and holder specified. Bulb size of lamps and their light center lengths are not the same even though they have same base.



When the wrong size lamp is used the light center is either too far down or too high up in the reflector. The result is wasted light or entirely different distribution than that intended. For perfect service reflectors should always be lamped at their rated capacity, and installed with holder specified.

Maintenance

X-Ray Reflectors need not be taken down from their mounting for cleaning. The inner side of the reflector is hard-glazed so that dust, smoky-film, or other foreign matter may readily be removed by wiping with a damp cloth. This cleans the reflector and brings it back to its original efficiency. The Golden Armored outer-side need only be wiped with a dry cloth to remove any dust that has accumulated.

Guarantee

As always in the past, X-Ray Reflectors continue to be guaranteed to give perfect service and complete satisfaction regardless of the date of purchase. Since 1897, when the first X-Ray Reflector was made, there has been no change in this policy.

Packing and Shipping

The shipping weights of standard packages are approximate and may vary slightly. X-Ray Reflectors are ordinarily shipped in cartons. In a few exceptional cases, however, they may be shipped in barrels.

All goods are delivered to the transportation company in perfect condition and properly packed. Our responsibility ceases upon delivery to them. Shipment should not be accepted if damaged until agent notes condition on freight or express bill. If upon unpacking you find concealed damage, notify agent to inspect immediately. Claims must be taken up with the transportation company.

When orders have been correctly filled, goods are not returnable without our consent.

Patents

Products shown in this catalog covered by U. S. Letters Patents shown below, are owned exclusively by Curtis Lighting, Inc. Infringers will be prosecuted.

Oct. 8, 1907	April 6, 1915
Nov. 26, 1907	Dec. 14, 1915
April 4, 1911	Feb. 29, 1916
May 27, 1913	Feb. 29, 1916
April 21, 1914	Jan. 2, 1917
March 2, 1915	Jan. 2, 1917
April 6, 1915	Aug. 7, 1917

Other U. S. Patents pending.
Foreign patents granted and pending.

X-Ray
TRADE MARK

TRADE MARK REGISTERED U. S. PATENT OFFICE
Trade Mark Registered in Principal Countries of the World

May 27, 1924	No. 1,725,193
April 28, 1925	No. 1,630,745
Dec. 15, 1925	No. 1,735,248
April 20, 1926	No. 1,755,298
July 6, 1926	No. 1,727,772
Aug. 10, 1926	No. 1,670,572
	No. 1,817,034

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Look under "Window Lighting" for classification by types of stores and window displays.]]

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